209

CONTENTS

TRADE NAME	MODEL	SET AND FOLDER No.
Capehart	T-522 (Ch. CR-76)	209-1
Emerson	725A (Ch. 120149A)	209-2
Fisher	50-C, -CH	209-3
Fleetwood	600 Tel. Rec.	209-4
General Electric	UHF-103 UHF Conv.	209-5
Gotham	319 Tel. Rec.	209-6
Hallicrafters	A-84 (Run 1)	209-7
Masco	WF-1A	209-8
RCA Victor	2-XF-931, 2, 3, 4 (Ch. RC1121A)	209-9
RCA Victor	21-T-197DE (Ch. KCS68A, Radio Ch. RC1111A & Audio Ch. RS141A) Tel. Rec.	209-10
Sentinel	1U346, 346	209-11
Setchell-Carlson	53, 531, 5301, 5302 (Ch. 152) Tel. Rec.	209-12
Westinghouse	H-802 (Ch. V-11900-1, -2, -3, -4, -5, V-11213) UHF Conv.	209-13

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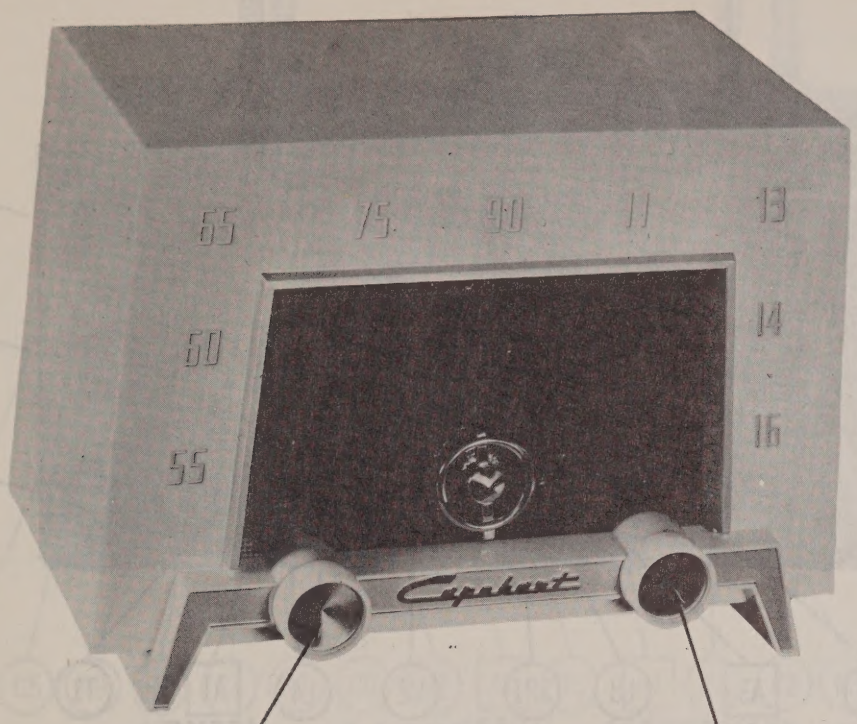
CAPEHART
MODEL T-522 (Ch. CR-76)



VOLUME CONTROL
ON-OFF SWITCH

TUNING CONTROL

CAPEHART
MODEL T-522 (Ch. CR-76)

TRADE NAME	Capehart Model T-522 (Ch. CR-76)
MANUFACTURER	Capehart-Farnsworth Corp., Fort Wayne, Ind.
TYPE SET	AC/DC Operated AM Superheterodyne Receiver
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det.-AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	105-125 Volts AC/DC
RATING	.24 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Turn tuning capacitor fully closed and set pointer parallel with base of dial at low frequency end of the dial.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1500KC	Tune to 1500KC	"	A6	"
4.		"	600KC	600KC	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Repeat Steps 2 and 3.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	INSTALLATION NOTES
		CAPEHART PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det-AVC-AF Amp.	12AV6	12AV6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	CAPEHART PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	50	150	75038IA-1	PRS150/50-50		EDL5515		2N521	TVA-2453	Red Yellow
B	50	150								
C2	470		2239-013	SI470	D6-471	TM5T5	GP2K-471	UC-5347	5GA-T47	
C3	56		2241-554							
C4	.047	200	2246-4730	P288-047	DF-503	PTE4S47		PT4147	2TM-S47	
C5	150		2240-021	SI150	D6-151	TM5T15	GP2K-151	UC-5315	5GA-T15	
C6A	220									
B	.002									
C	.005		♦452244A-1		♦PC-150		♦1408-01		♦103C4	
D	250									
E										
C7	.022	600	2248-2230	P688-022	DF-203	PTE6S22		PT6122	6TM-S22	
C8	.022	600	2248-2230	P688-022		PTE6S22		PT6122	6TM-S22	
C9	.047	600	2248-4730	P688-047		PTE6S47		PT6147	6TM-S47	

♦ Items C6A, C6B, C6C, C6D, C6E, R7A, R7B, R7C are combined in one unit.
When replacing items separately C6D and C6E should total 250MMF.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	CAPEHART PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	453287A-1	Q13-133	AG-60-Z	BSK-60-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	CAPEHART PART No.	IRC PART No.	
R2	100Ω	½	3229-101		
R3	22KΩ	½	3229-223	BTS-22K	
R4	1 Meg	½	3229-105	BTS-1 Meg	
R5	100Ω	½	3229-101	BTS-100	
R6	3.3Meg	½	3229-335	BTS-3.3Meg	

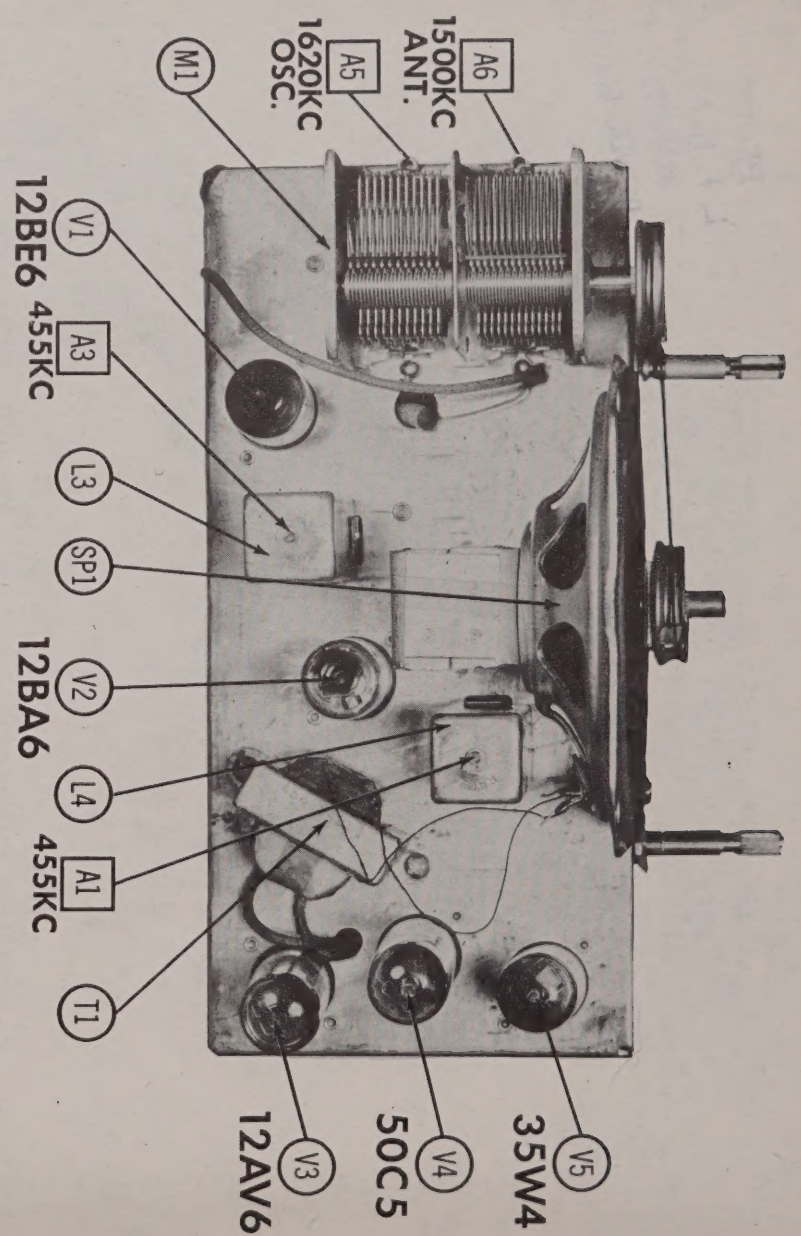
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	CAPEHART PART No.	IRC PART No.	
R7A	6.8Meg	½		BTS-6.8Meg	
B	470KΩ	½	♦452244A-1	BTS-470K	
C	470KΩ	½		BTS-470K	
R8	150Ω	½	3229-151	BTS-150	
R9	1500Ω	1	3232-152	BTA-1500	
R10	220KΩ	½	3229-224	BTS-220K	

♦ Items R7A, R7B, R7C, C6A, C6B, C6C, C6D, C6E are combined in one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		CAPEHART PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2.8KΩ	3.3Ω	340Ω	.88Ω	453294B-1	A-3332	A-3025	RO-302①	S-1X ①	① Drill one new mtg. hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

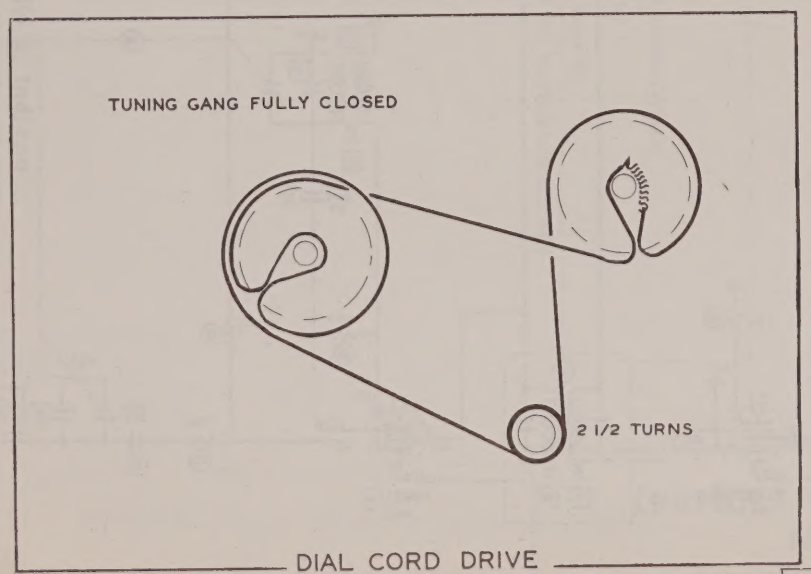
ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	CAPEHART PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.3Ω	650546A-2	ST-113 Mod. P4-X	4A07	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	CAPEHART PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	2Ω		750382B-1				Includes cabinet back
L2	Osc. Coil	1Ω	11Ω	452242B-1			71-Osc.	
L3	Input IF	12.5Ω	14.5Ω	452243A-2	16-6758	BC-352	12-C1	
L4	Output IF	14Ω	12.5Ω	452243A-2	16-6758	BC-353	12-C2	

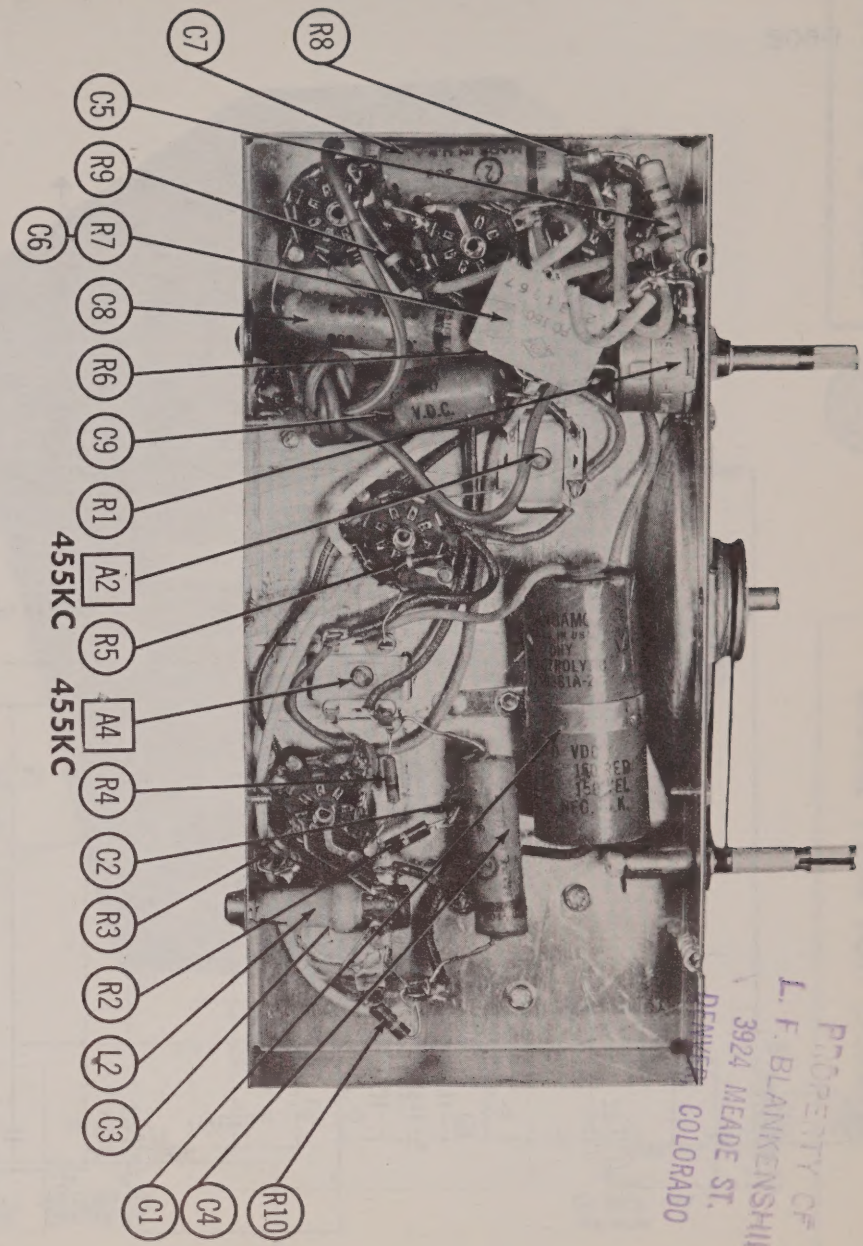
MISCELLANEOUS

ITEM No.	PART NAME	CAPEHART PART No.	NOTES
M1	Tuning Capacitor	650627A-1	35-460MMF, 32-175MMF
	Cabinet	850240B-1	(Ivory)
	Cabinet	850240B-2	(Charcoal grey)
	Cabinet	850240B-3	(Sunburst Red)
	Grille	650626A-1	(Maroon)
	Grille	650626A-2	(Gold)
	Grille	650626A-3	(Oxford Grey)
	Knob	453312A-1	(Ivory)
	Knob	453312A-2	(Charcoal Grey)
	Knob	453312A-3	(Sunburst Red)
	Dial Pointer	453289B-1	



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



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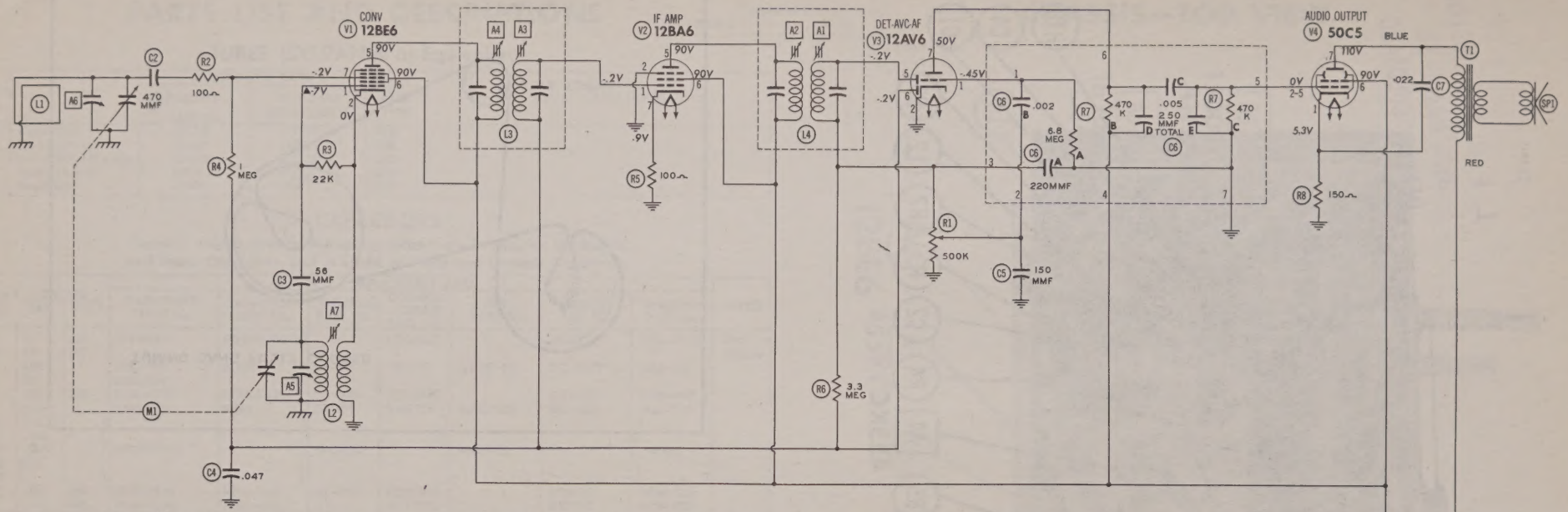
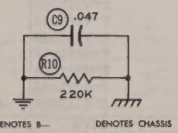
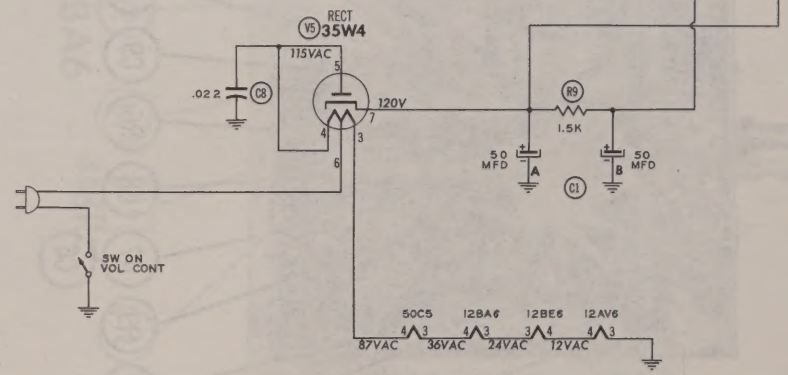
CAPEHART
MODEL T-522 (Ch. CR-76)



IF=455 KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE





RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	1Ω	24Ω	12Ω	†1.5KΩ	†1.5KΩ	4.8Meg
V 2	12BA6	3.8Meg	0Ω	24Ω	36Ω	†1.5KΩ	†1.5KΩ	100Ω
V 3	12AV6	6.8Meg	0Ω	0Ω	12Ω	500KΩ	3.8Meg	†470KΩ
V 4	50C5	150Ω	470KΩ	36Ω	85Ω	470KΩ	†1.5KΩ	†340Ω
V 5	35W4	INF	INF	85Ω	120Ω	120Ω	112Ω	1 Meg

▲ TAKEN WITH VACUUM TUBE VOLTMETER .
† MEASURED FROM PIN 7 OF V5.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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209-1

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PROPERTY OF
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EMERSON
MODEL 725A (Ch. 120149A)

EMERSON
MODEL 725A (Ch. 120149A)

TRADE NAME	Emerson Model 725A (Ch. 120149A)
MANUFACTURER	Emerson Radio & Phono Corp., 111 Eight Ave., New York, N.Y.
TYPE SET	AC Operated Phonograph Audio Amplifier with 3 Speed Automatic Record Changer
TUBES (Three)	Types 12SQ7GT AF Amp., 50L6GT Audio Output, 35Z5GT Rectifier
POWER SUPPLY	105-125 Volts AC-60 Cycles RATING .25 Amp @ 117 Volts AC

FOR SERVICE INFORMATION ON RECORD CHANGER UNIT SEE V-M Model 950-PHOTOFACT SET #107 FOLDER 13 OR RECORD CHANGER MANUAL CM-3.

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PARTS LIST AND DESCRIPTIONS

EMERSON
MODEL 725A

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	INSTALLATION NOTES
		EMERSON PART No.	STANDARD REPLACEMENT		
V1	AF Amplifier	800050	12SQ7GT	8Q	
V2	Audio Output	800070	50L6GT	7S	
V3	Rectifier	800090	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	EMERSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	30	150	925105	PRS150/30-50		EDL5315		2N520	TVA-2450	Red
B	50	150								Green
C2	.002	600	923723	P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C3	.02	400	923524	P488-02	DD-203	PTE4S2		PT412	4TM-S2	
C4	.1	400	923515	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C5	.02	400	923524	P488-02	DD-203	PTE4S2		PT412	4TM-S2	Note 1
C6	.1	400	923515	P488-1	DF-104	PTE4P1		PT401	4TM-P1	

Note 1. Some Models use .05MFD in this application (part # 923354)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	EMERSON PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	390062	Q13-133	AG-60-Z	BSK-60-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	EMERSON PART No.	IRC PART No.	
R2	30Meg	½			Note
R3	30 Meg	½			Note
R4	470KΩ	½	351132	BTS-470K	
R5	470KΩ	½	351132	BTS-470K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	EMERSON PART No.	IRC PART No.	
R6	150Ω	1	370292	BTA-150	
R7	1000Ω	1	370492	BTA-1000	
R8	39Ω	1	370152		
R9	133Ω	5	394160		

Note. Some models use a single 15 Meg resistor in this application.

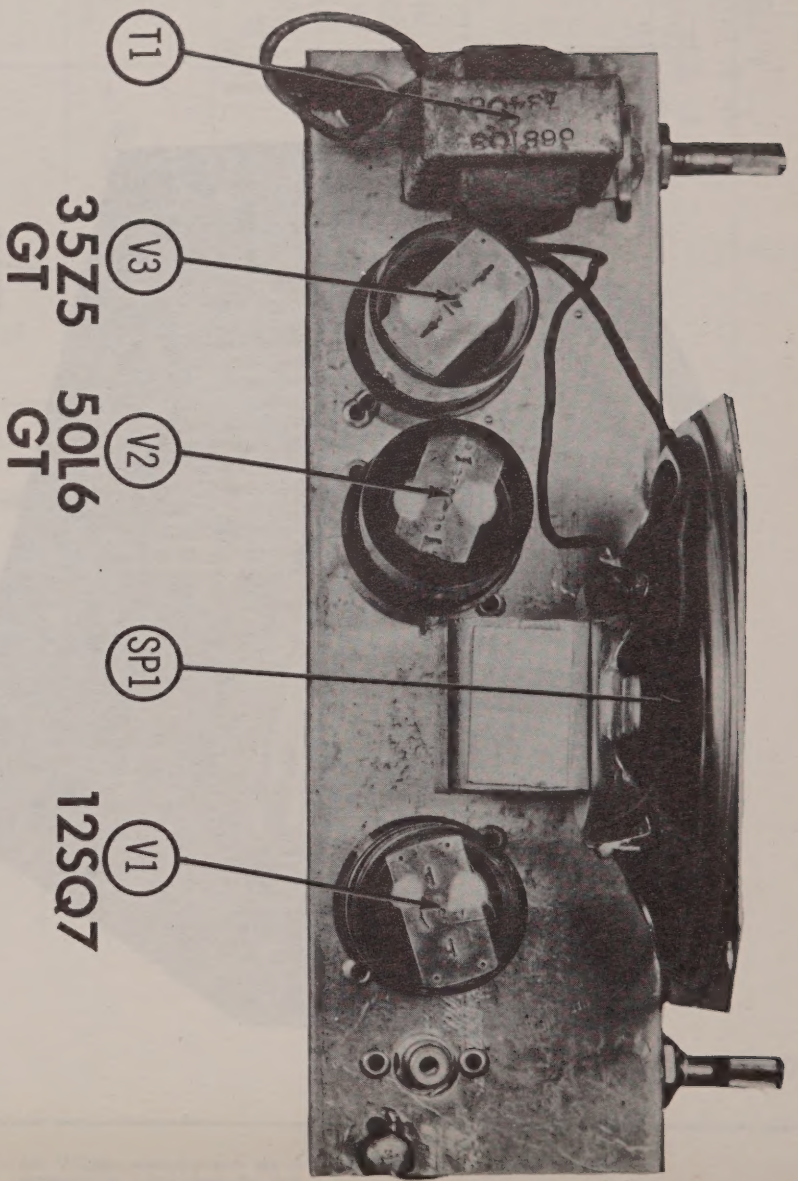
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		EMERSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2KΩ	3.1Ω	173Ω tap ⓐ 8.5Ω	.69Ω	734064	A-3330 ①	A-3031 ①	RO-3 ①		① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	EMERSON PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.1Ω	180093 180092 ①	ST-113 Mod. P4-X	4A07	① Alternate 4" PM Speaker

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	EMERSON PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	960029	LT-4-AG	D-AG	W66B	A66U	33	0-2 or S-2	

ASTATIC, SHURE AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

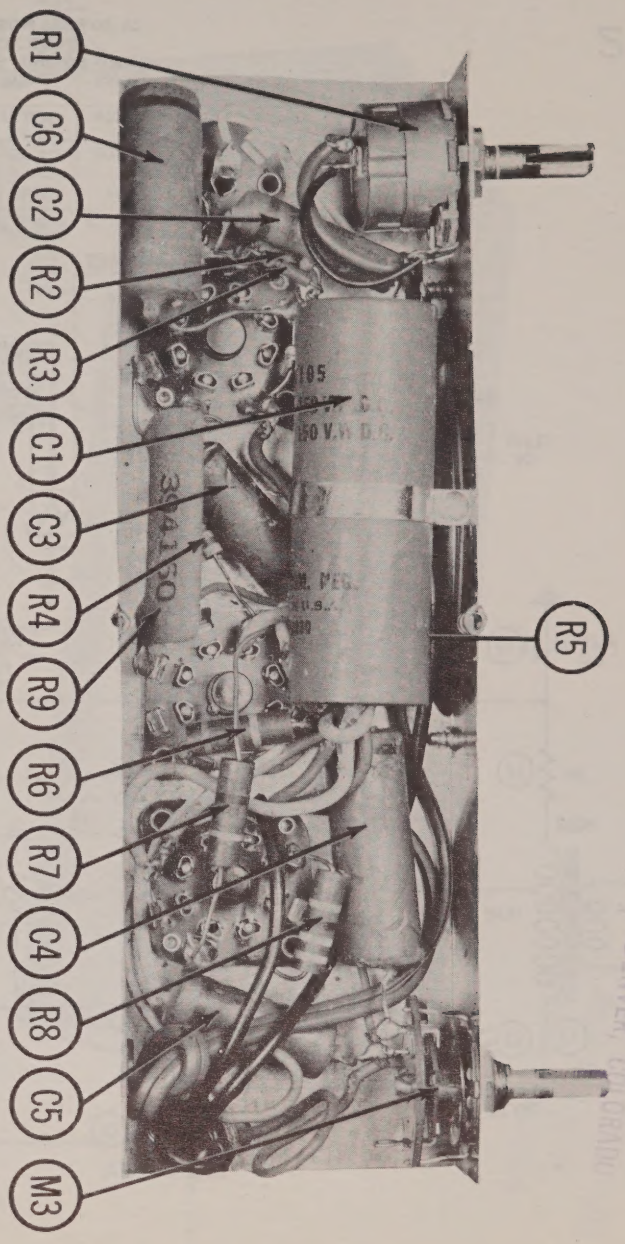
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	EMERSON PART No.	WALCO PART No.	JENSEN PART No.	
M2	960074	W-30AGA or W-30AGS	JP-312 or JPS-312	

MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M3	Switch	510032	Tone
	Cabinet	140128	
	Knob	450115	

CHASSIS—BOTTOM VIEW



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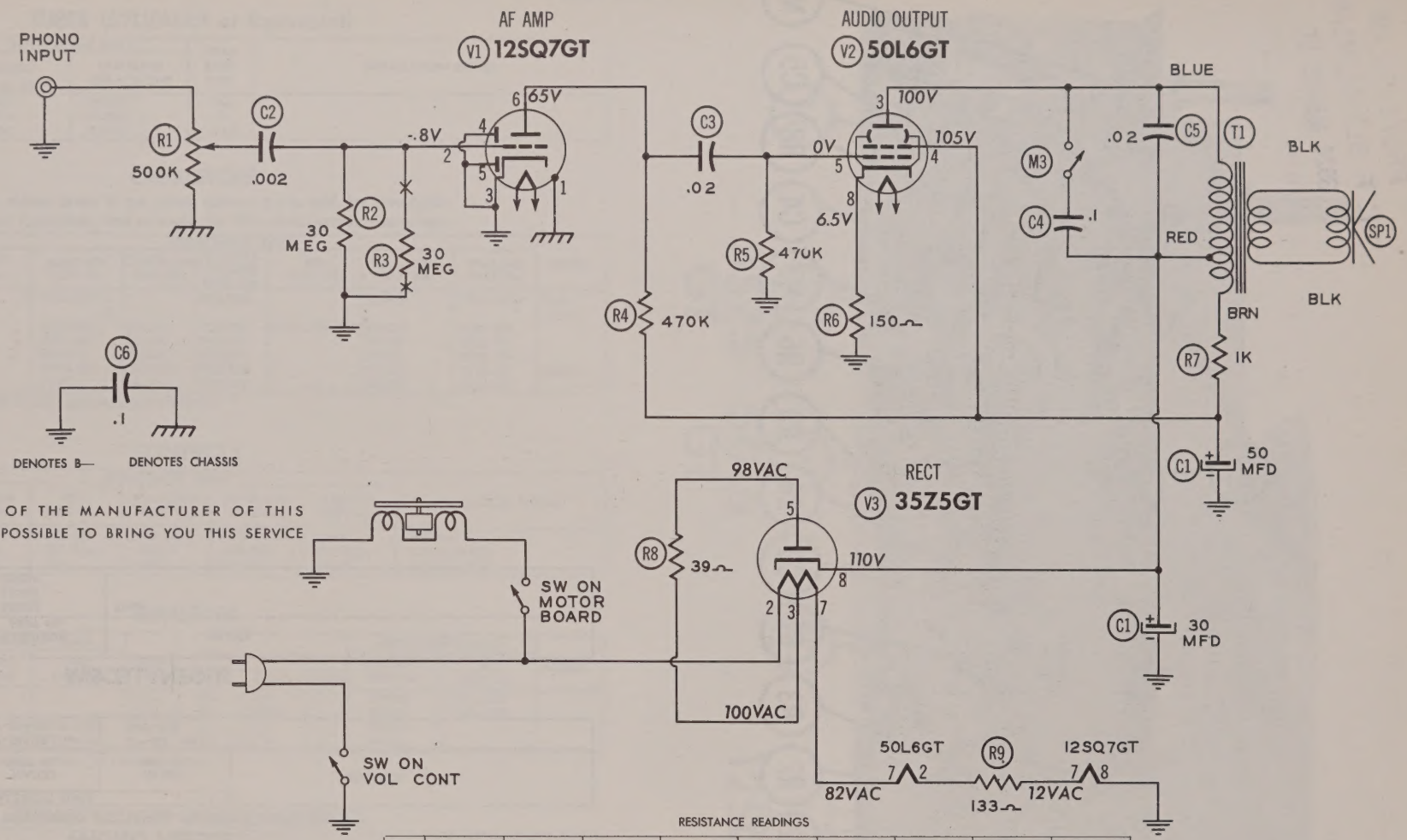

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SQ7GT	♦0Ω	15 Meg	0Ω	0Ω	0Ω	†470KΩ	12Ω	0Ω
V 2	50L6GT	INF	145Ω	†173Ω	†1.1KΩ	470KΩ	0Ω	190Ω	150Ω
V 3	35Z5GT	INF	220Ω	230Ω	INF	260Ω	†1KΩ	180Ω	50KΩ

MEASURED TO B- UNLESS NOTED
♦ MEASURED TO CHASSIS
† MEASURED FROM PIN 8 OF V3

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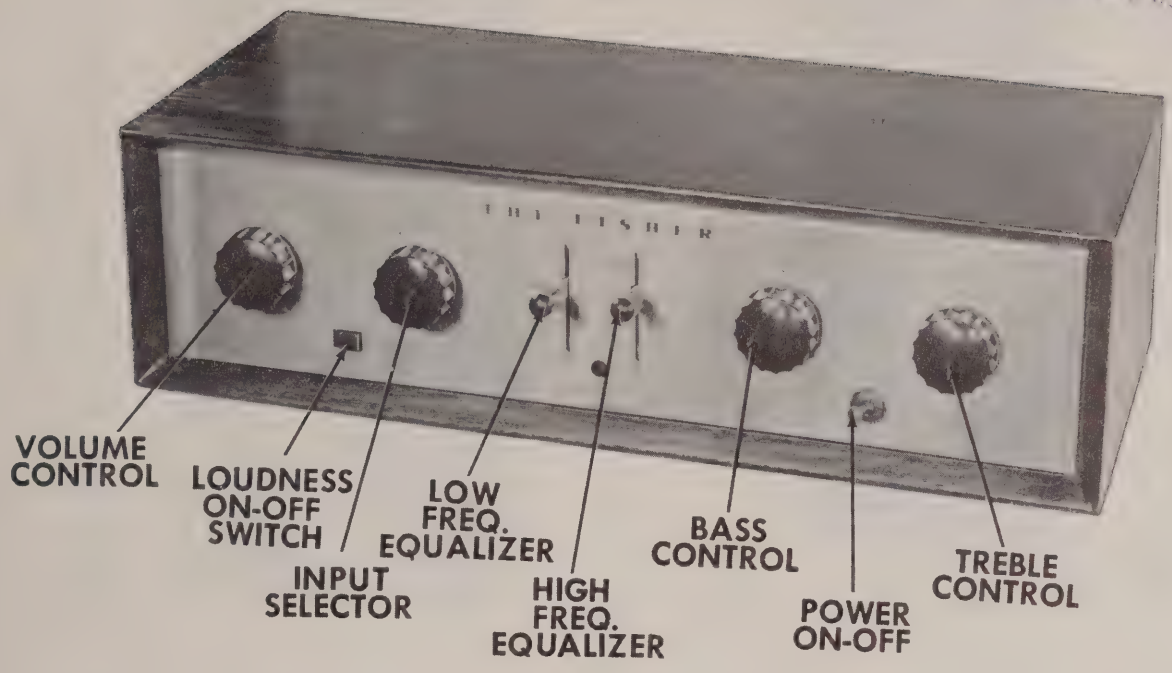
209-2

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

L. J.
3[illegible]
DENVER, [illegible]

FISHER
MODELS 50-C, -CH



FISHER
MODELS 50-C, -CH

TRADE NAME	Fisher Model 50-C, 50-CH
MANUFACTURER	Fisher Radio Corp., 41 E. 47th. St., New York, N.Y.
TYPE SET	AC Operated 5 Channel Audio Pre-Amplifier
TUBES (Three)	Types 12AU7 AF Amp., 12AX7 AF Amp., 12AX7 AF Amp.
POWER SUPPLY	110-120 Volts AC-50/60 Cycle RATING .15 Amp @ 117 Volts AC

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: FISHER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	INSTALLATION NOTES
V1	AF Amplifier	12AU7	12AU7	9A	
V2	AF Amplifier	12AX7	12AX7	9A	
V3	AF Amplifier	12AX7	12AX7	9A	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

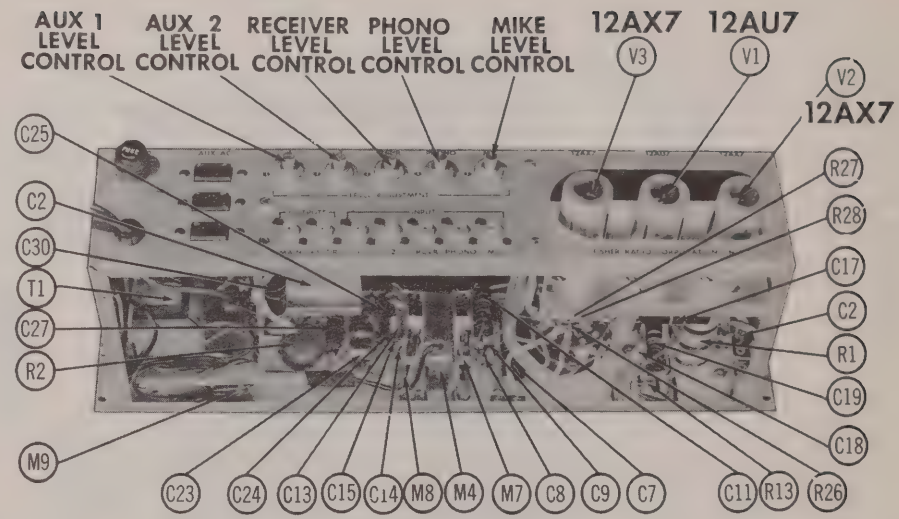
ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: FISHER PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTE
C1A	▲40	300	C-505-120			DO92			R1327	
B	■40	300								
C	▲40	300								
D	40	300								
C2A	▲500	25	C-505-121						R1076	
B	▲500	25								
C3	25	25		PRS25/25		BR252A		TC26	TVA-1205	Note 1
C4	.022	400	C-2946	P488-022		PTE4S22		PT4122	4TM-S22	
C5	.022	400	C-2946	P488-022		PTE4S22		PT4122	4TM-S22	
C6	5		C-1779	SI5	TCZ-4.7	5W5V5	GP1K-050	ZT-555	5GA-V5	
C7	.1	400	C-3156	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C8	.01	400	C-3302							
C9	1500			SI1500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	Note 1
C10	.0082	400	C-3303							
C11	.0047	400	C-3304							
C12	.1	400	C-3156	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C13	420		C-3308							
C14	800		C-3309							
C15	1300		C-3307							
C16	.01	400	C-3155	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C17	.1	400	C-3156	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C18	82		C-3310							
C19	.027	400	C-3294							
C20	.022	400	C-2946	P488-022		PT4122		PT4122	4TM-S22	
C21	1500			SI1500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	Note 2
C22	1500			SI1500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	Note 2
C23	220		C-3306	SI220	D6-221	5W5T25	GP2K-221	UC-5322	5GA-T22	
C24	.0022	400	C-3301	P688-0022	D6-222	PTE6D22	GP2-333-222	PT6222	6TM-D22	
C25	.047	400	C-2944	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C26	.0022	400	C-3301	P688-0022	D6-222	PTE6D22	GP2-333-222	PT6222	6TM-D22	
C27	.022	400	C-2946	P488-022		PTE4S22		PT4122	4TM-S22	
C28	.047	400	C-2944	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C29	.01	400	C-3155	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C30	.1	400	C-3156	P488-1	DF-104	PTE4P1		PT401	4TM-P1	

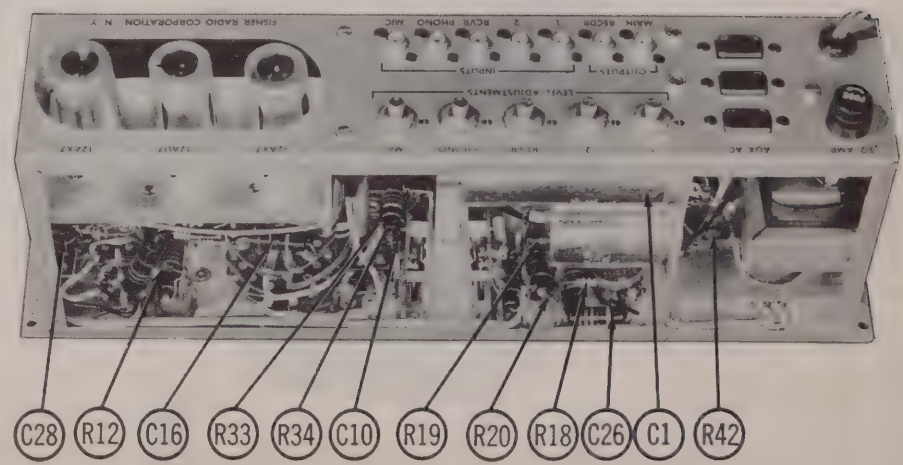
Note 1. Not used in all Models.
Note 2. When C21 is .0039MFD (part #C-3300), C22 is not used.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FISHER PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩΩ	½	R-505-122					Loudness
B	1 Meg	½						
C	100KΩ	½						
R2A	1 Meg	½	R-2815-10	Q13-137	AG-63-Z	B-70	U-53	Bass
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A
R3A	1 Meg	½	R-2815-10	Q13-137	AG-63-Z	B-70	U-53	Treble
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R3A
R4A	500KΩ	½	R-2815-9	Q11-133	AG-58-S	AB-59	SU-50	Auxiliary Volume #1
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R4A
R5A	500KΩ	½	R-2815-9	Q11-133	AG-58-S	AB-59	SU-50	Auxiliary Volume #2
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R5A
R6A	500KΩ	½	R-2815-9	Q11-133	AG-58-S	AB-59	SU-50	RCVR Volume
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R6A
R7A	500KΩ	½	R-2815-9	Q11-133	AG-58-S	AB-59	SU-50	Phono Volume
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R7A
R8A	500KΩ	½	R-2815-9	Q11-133	AG-58-S	AB-59	SU-50	Mike Volume
B	Shaft		Not Req.	Not Req.	FKS -1/4	AK-1	Not Req.	Attach to R8A

CHASSIS—TOP VIEW





PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	FISHER PART No.	IRC PART No.	
R9	1 Meg	½	R-1732	BTS-1 Meg	
R10	2200Ω	½	R-1737	BTS-2200	
R11	47KΩ	½	R-1580	BTS-47K	
R12	10KΩ	½	R-1531	BTS-10K	
R13	1 Meg	½	R-1732	BTS-1 Meg	Note 1
R14	1 Meg	½	R-1732	BTS-1 Meg	
R15	1500Ω	½	R-1741	BTS-1500	
R16	3300Ω	½	R-1837	BTS-3300	
R17	39KΩ	½	R-1938	BTS-39K	
R18	47KΩ	½	R-1580	BTS-47K	
R19	10KΩ	½	R-1531	BTS-10K	
R20	100KΩ	½	R-1583	BTS-100K	
R21	3300Ω	½	R-1837	BTS-3300	
R22	220KΩ	½	R-1624	BTS-220K	
R23	1 Meg	½	R-1732	BTS-1 Meg	
R24	2200Ω	½	R-1737	BTS-2200	
R25	47KΩ	½	R-1580	BTS-47K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	FISHER PART No.	IRC PART No.	
R26	2.2Meg	½	R-1734	BTS-2.2Meg	
R27	2.2Meg	½	R-1734	BTS-2.2Meg	
R28	1500Ω	½	R-1741	BTS-1500	
R29	100KΩ	½	R-1583	BTS-100K	
R30	2.2Meg	½	R-1734	BTS-2.2Meg	
R31	1 Meg	½	R-1732	BTS-1 Meg	
R32	39KΩ	½	R-1938	BTS-39K	Note 2
R33	18Meg	½	R-3009	BTS-18Meg	
R34	220KΩ	½	R-1624	BTS-220K	
R35	1500Ω	½	R-1741	BTS-1500	
R36	100KΩ	½	R-1583	BTS-100K	
R37	47KΩ	½	R-1580	BTS-47K	
R38	47Ω	½	R-1580		
R39	3300Ω	½	R-1837	BTS-3300	
R40	3300Ω	½	R-1837	BTS-3300	
R41	10KΩ	½	R-1531	BTS-10K	Note 2
R42	15Ω	2			Note 3

Note 1. Not used in all models.
Note 2. Some models use a 47KΩ resistor in this application.
Note 3. Some models use a 10Ω resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	FISHER PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC @ .15A	394VCT .007ADC	22V - .45A tap @5.4V- .13 A		T-505-115				

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT	FISHER PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.
M1	.007ADC	SR-3283			1Q16		126-15C1-Q
M2	.280ADC	SR-3078					304B

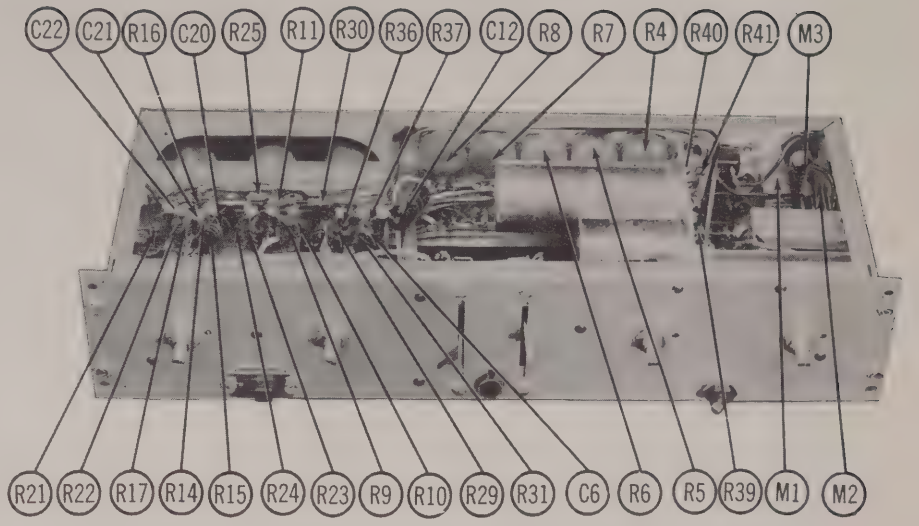
FUSES

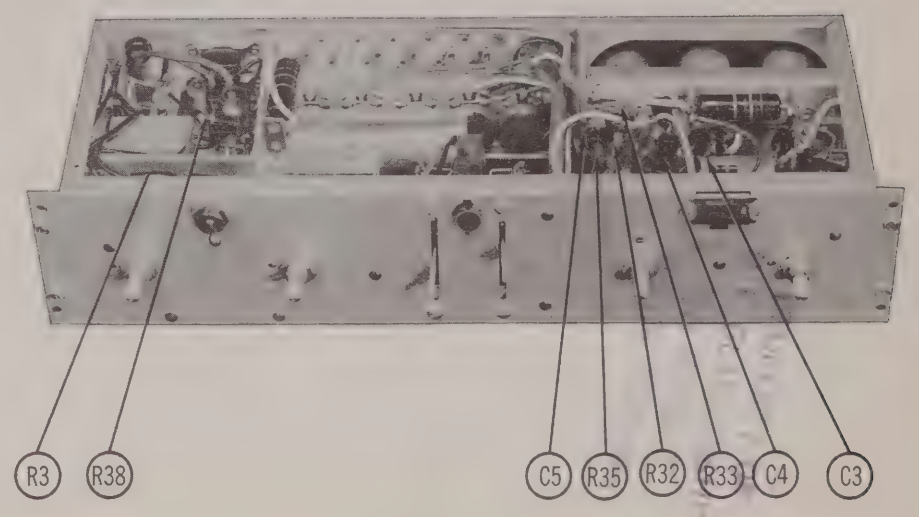
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			FISHER PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M3	3AG	½A-250V	F-3297		312.500 (3AG-½A)	342001	AGC-½	HKP

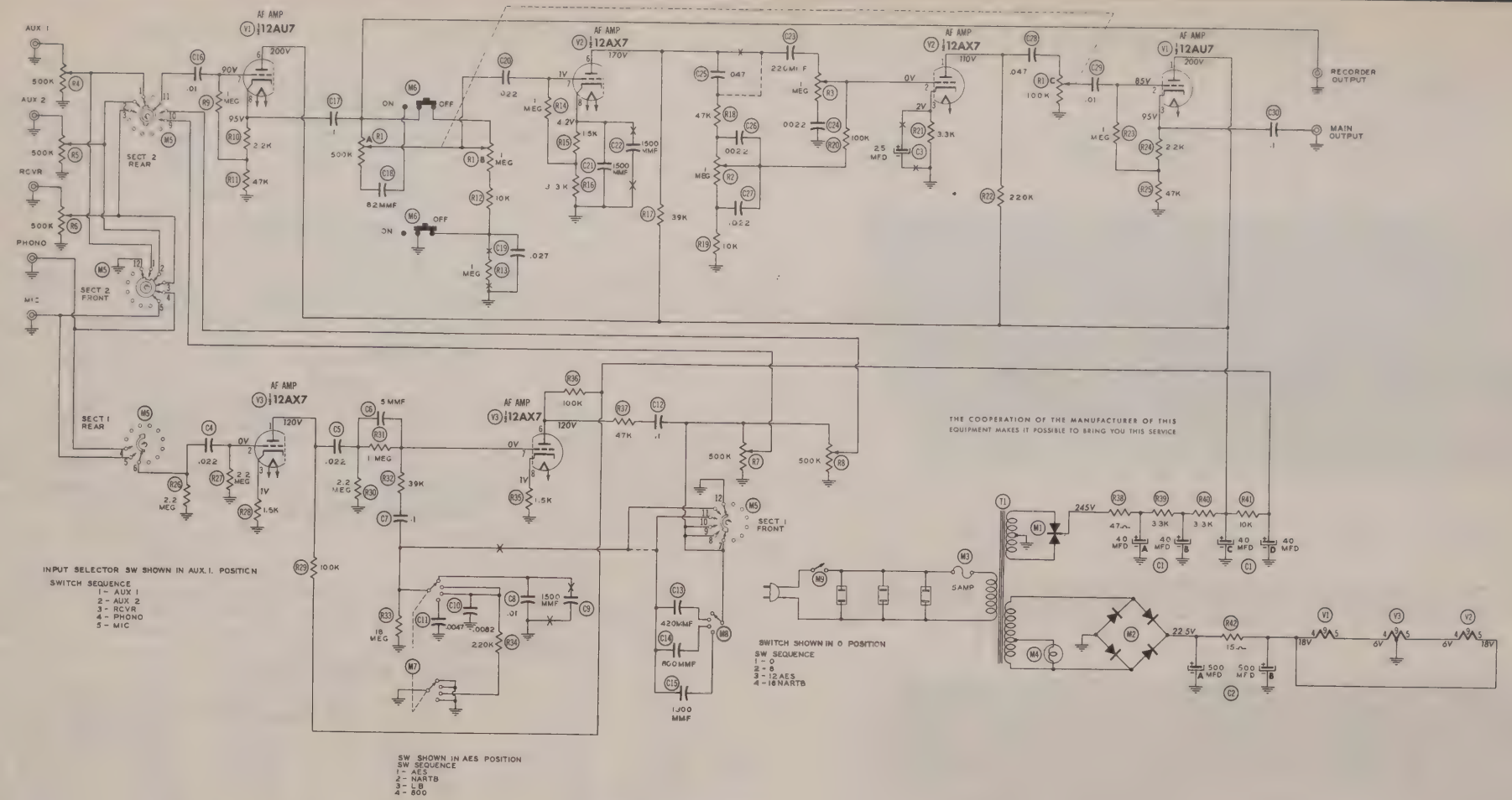
MISCELLANEOUS

ITEM No.	PART NAME	FISHER PART No.	NOTES
M4	Panel Light	I-2148	Type #47
M5	Switch	S-505-123	Input Selector (Rotary)
M6	Switch	S-505-117	Loudness Compensation "Off/On" (DPDT Slide)
M7	Switch	S-3284	Low Frequency Equalization (4 position lever)
M8	Switch	S-3284	High Frequency Equalization (4 position lever)
M9	Switch	S-505-126	AC Off/On (SPST Toggle)

CHASSIS—BOTTOM VIEW







RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AU7	†6.6KΩ	1 Meg	50KΩ	9.5Ω	5Ω	†6.6KΩ	1 Meg	50KΩ	7Ω
V 2	12AX7	†225KΩ	110KΩ	3.3KΩ	5Ω	9.5Ω	†45KΩ	1 Meg	4.8KΩ	7Ω
V 3	12AX7	†115KΩ	2.2Meg	1.5KΩ	5Ω	5Ω	†115KΩ	3.2Meg	1.5KΩ	0Ω

† MEASURED FROM OUTPUT OF M1.
MEASUREMENTS TAKEN WITH BASS CONTROL OF EXTREME ATTENUATION (C-CW).

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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209-3

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

DEWALD MODELS ET-171-20, ET-190D (Revised), FT-200 (Revised), G-174, G-201, G-210, G-211

DENVER, COLORADO

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MODEL G-210

DEWALD MODELS ET-171-20, ET-190D (Revised), FT-200 (Revised), G-174, G-201, G-210, G-211

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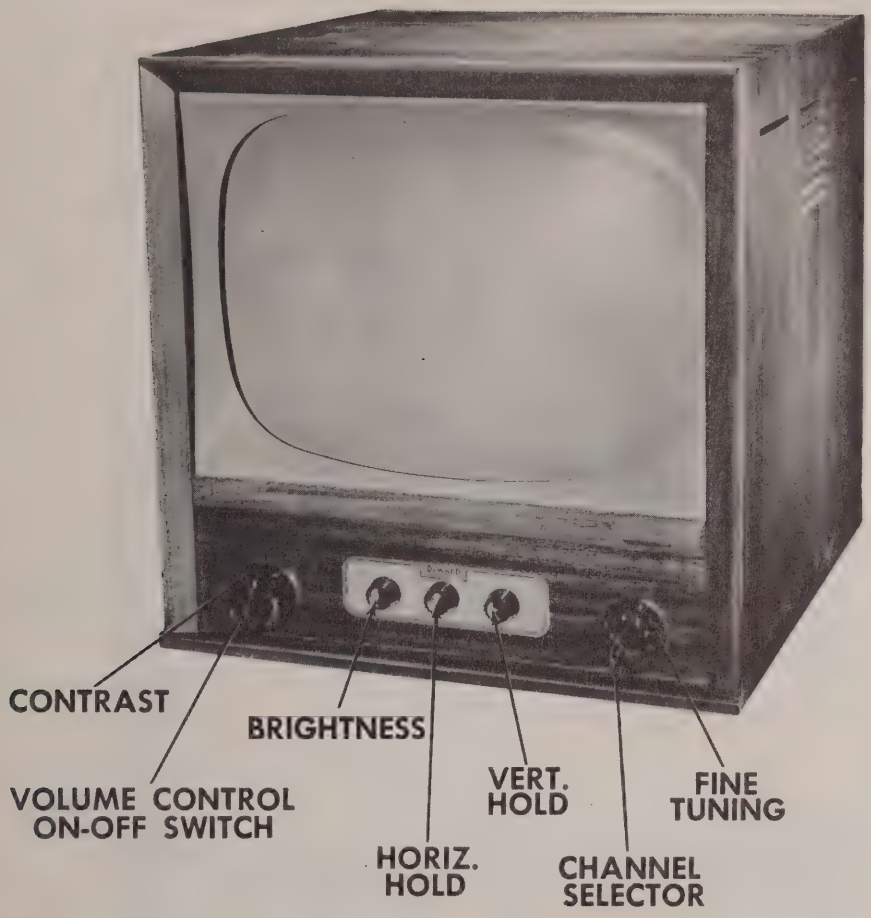
DEWALD MODELS
ET-171-20, ET-190D (Revised), FT-200 (Revised), G-174, G-201, G-210, G-211



DEWALD MODEL G-210

TRADE NAME	Dewald Models ET-171-20, ET-190D (Revised) FT-200 (Revised) G-174, G-201, G-210, G-211
MANUFACTURER	Dewald Radio Mfg. Co., 35-15 37th. Ave., Long Island City 1, N.Y.
TYPE SET	Television Receiver
TUBES	Twenty

POWER SUPPLY 110-120 Volts AC-60 Cycle RATING 1.94 Amp@ 117 Volts AC
TUNING RANGE- Channel 2 thru 13, Video IF 26.35MC, Sound IF 21.85MC (Intercarrier)

INDEX

Alignment Instructions 6, 7
Disassembly Instructions 18
Horizontal Sweep Circuit Adjustments 11
Part List and Descriptions 14, 15
Photographs
Cabinet-Rear View 11
Capacitor and Alignment Identification 4, 9
Chassis - Top View 3
RF Tuner 10
Photographs (Cont)
Resistor and Inductor Identification 13, 16
Resistance Measurements 8
Servicing in the Field 18
Schematic 2
Trouble Shooting Aids 12, 17
Tube Failure Check Chart 5
Tube Placement Chart (Bottom View) 8
Tube Placement Chart (Top View) 5

DEWALD MODELS
ET-171-20, ET-190D (Revised), FT-200 (Revised), G-174, G-201, G-210, G-211

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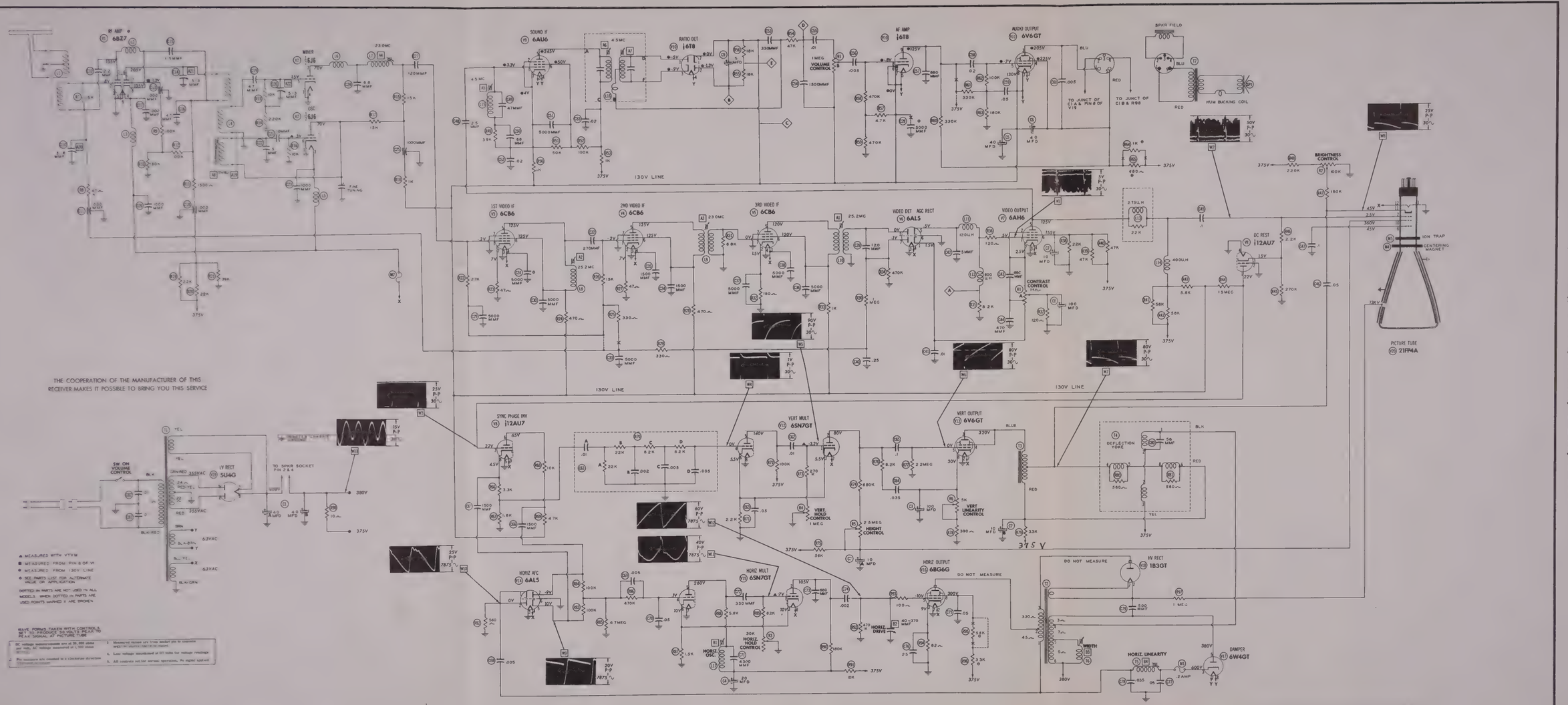

DEWALD MODELS ET-171-20, ET-190D (Revised), FT-200 (Revised), G-174, G-201, G-210, G-211

DEWALD MODELS ET-171-20, ET-190D (Revised), FT-200 (Revised), G-174, G-201, G-210, G-211

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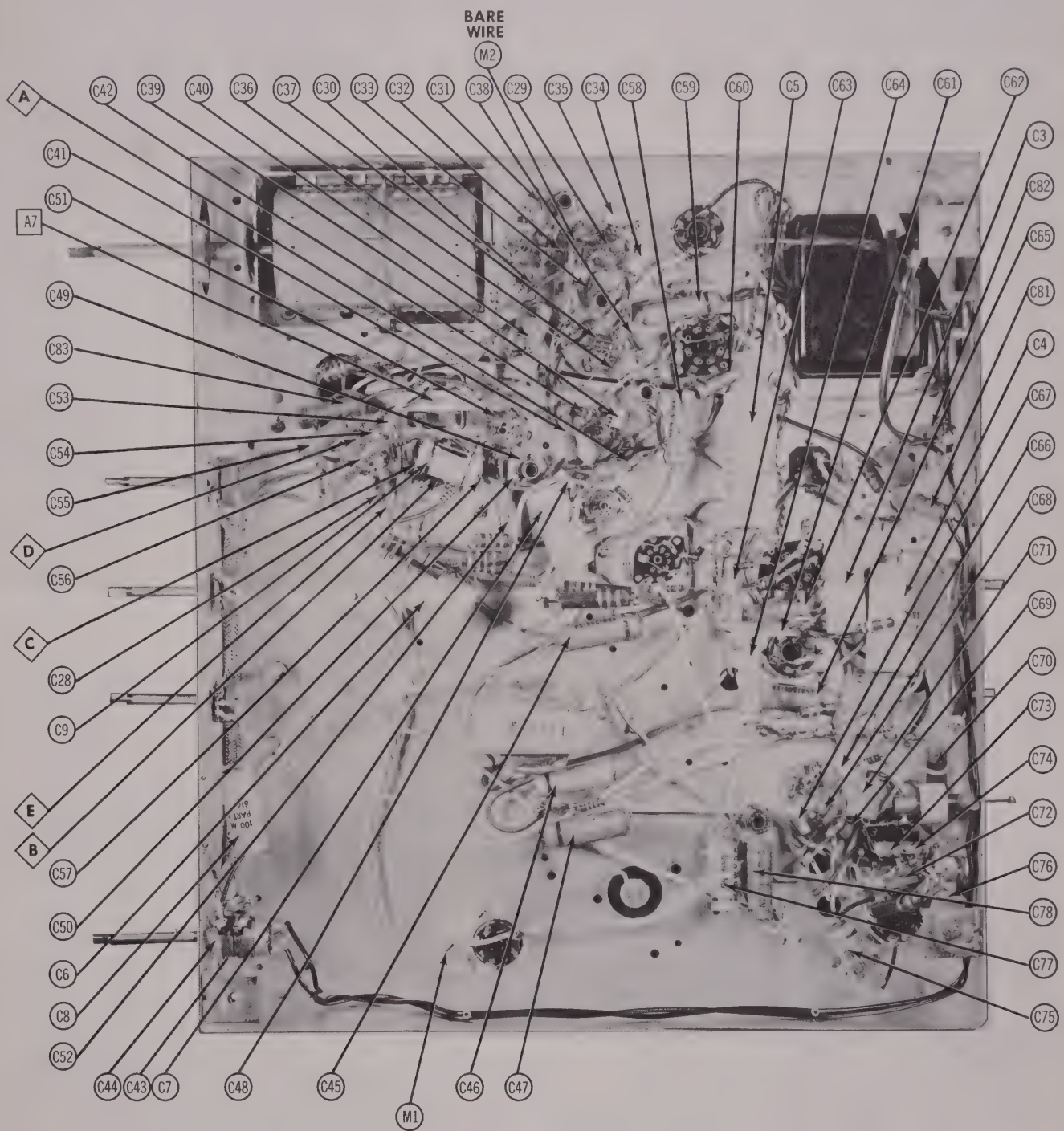
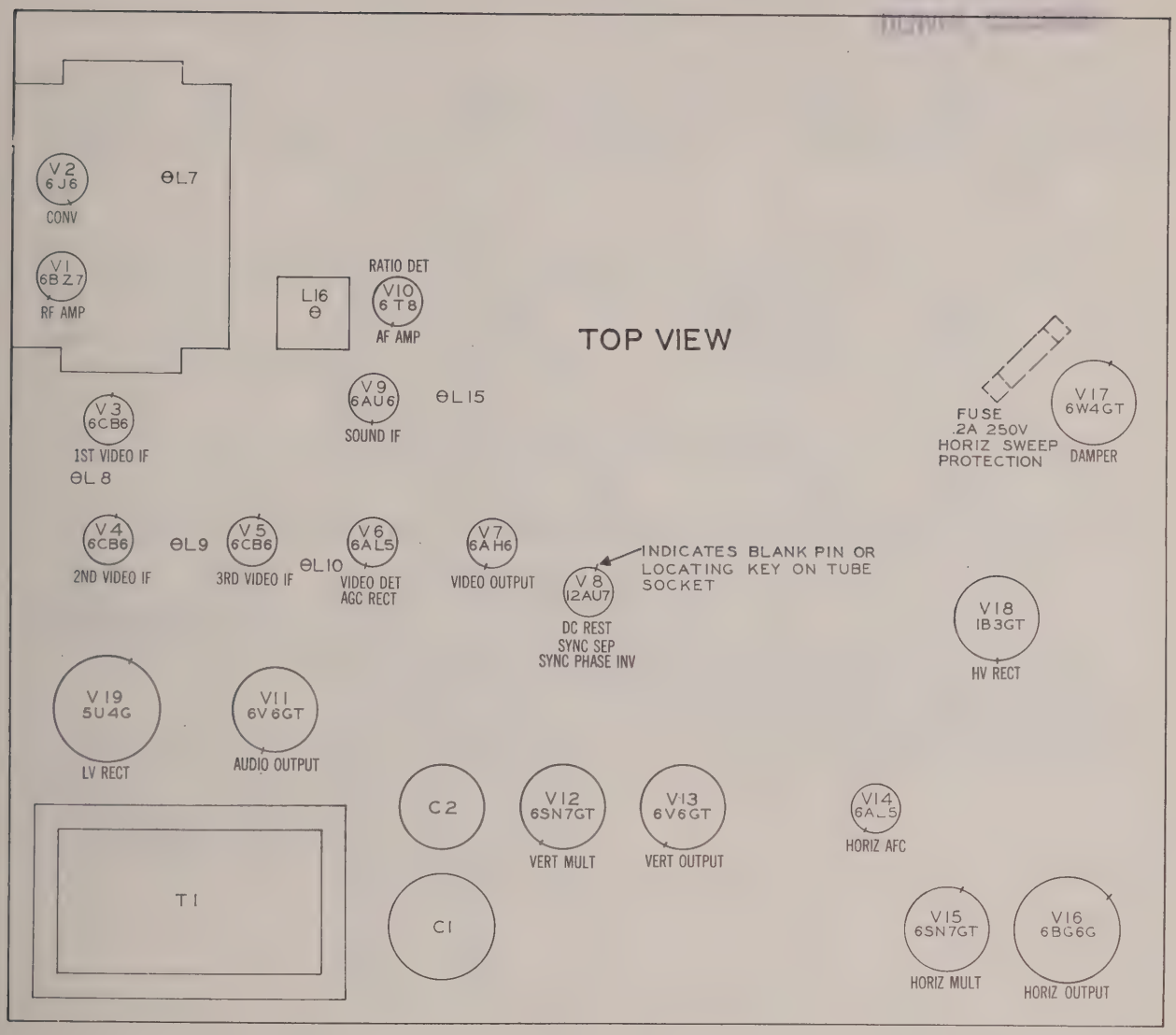
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW- CAPACITOR AND ALIGNMENT IDENTIFICATION

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V19

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5, V6, V7, V11
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V7, V8, V20
Has pic. no sound - V9, V10, V11

SYNC FAILURE
No vert. sync - V8, V12
No horiz. sync - V8, V14, V15
No vert. or horiz. sync - V8

SWEEP FAILURE
No raster, has sound - V15, V16, V17, V18, V20, Fuse (M1)
No vertical deflection - V12
Poor vert. linearity or foldover - V12
Poor horiz. linearity or foldover - V15, V16, V17
Narrow picture - V15, V16, V17, V18, V19
Vert. off freq. - V8, V12
Horiz. off freq. - V8, V14, V15

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard can be eliminated by removing the horizontal oscillator tube, V15, from its socket.

VIDEO IF ALIGNMENT

Remove the converter tube, V2, from its socket and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the ungrounded side of C40. Connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	25.2MC (Unmod)	Any	DC probe to point (A) Common to chassis.	A1, A2	Adjust for maximum deflection.
2.	"	"	23.0MC	"	"	A3, A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	24MC (10MC Swp)	22.5MC 24.1MC 26.35MC	Any	Vert. Amp. to point (A). Low side to chassis.		Check for response similar to Fig. 1. If necessary retouch A1 thru A4 for desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

During Sound IF Alignment the common lead of the VTVM is connected to approximately 130V with respect to chassis. Avoid touching or grounding the VTVM case.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.01MFD	High side to pin 1 (grid) of 6AH6 (V7). Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point (B) Common to point (C)	A5, A6	Adjust for maximum deflection.
5.	"	"	"	"	DC probe to point (D) Common to point (E)	A7	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	.01MFD	High side to pin 1 (grid) of 6AH6 (V7). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. Amp. to point (B). Low side to chassis.	A5, A6	Disconnect stabilizer capacitor C9. Adjust for curve of maximum amplitude and symmetry as in Fig. 2.
5.	"	"	"	"	"	Vert. Amp. to point (D). Low side to chassis.	A7	Reconnect capacitor C9. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 3. SLIGHTLY retouch A6 for maximum amplitude and straightness of crossover lines.

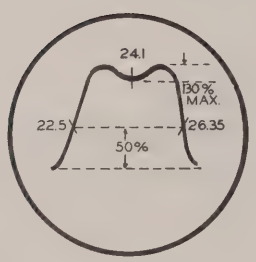


FIG. 1

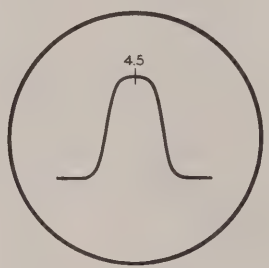


FIG. 2

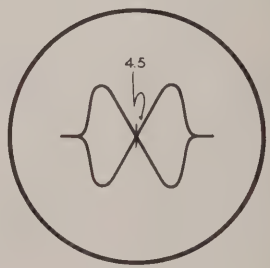


FIG. 3

ALIGNMENT INSTRUCTIONS (CONT.)

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OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
The channel oscillator adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. amp to point (A) Low side to chassis.	A8	Adjust to place video marker at 50% on the high frequency slope of the IF response curve as in Fig. 4.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A9	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A10	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A11	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A12	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A13	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A14	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A15	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A16	
			69MC (10MC Swp)	67.25M 71.75MC	4		A17	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A18	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A19	

RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. Amp. thru 10KΩ to point (F). Low side to chassis.	A20, A21, A22	Adjust for response similar to Fig. 5.
8.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check for response similar to Fig. 5. If markers fall below 70% on any channel make compromise adjustments of A20, A21, and A22 with channel switch set to that channel, then recheck all other channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

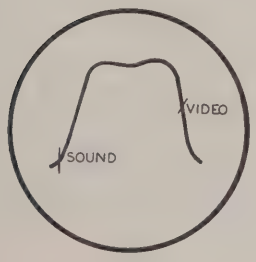


FIG. 4

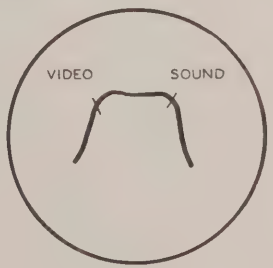
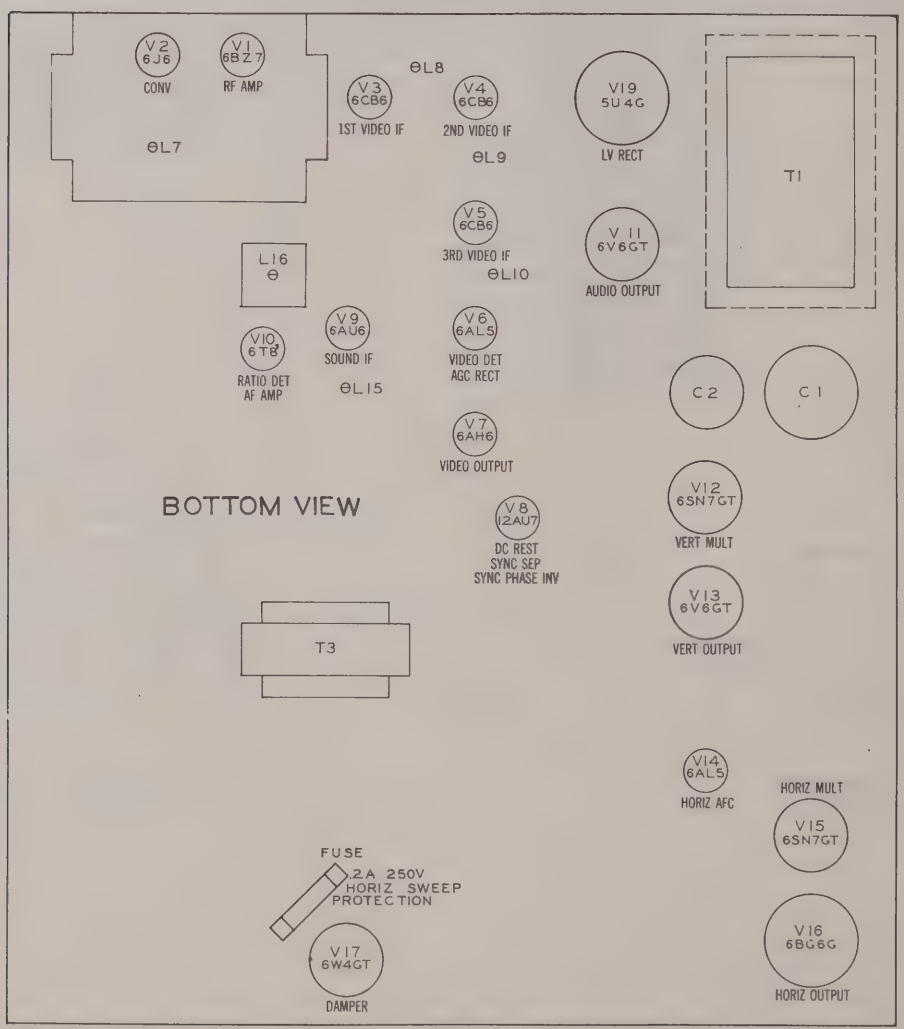


FIG. 5

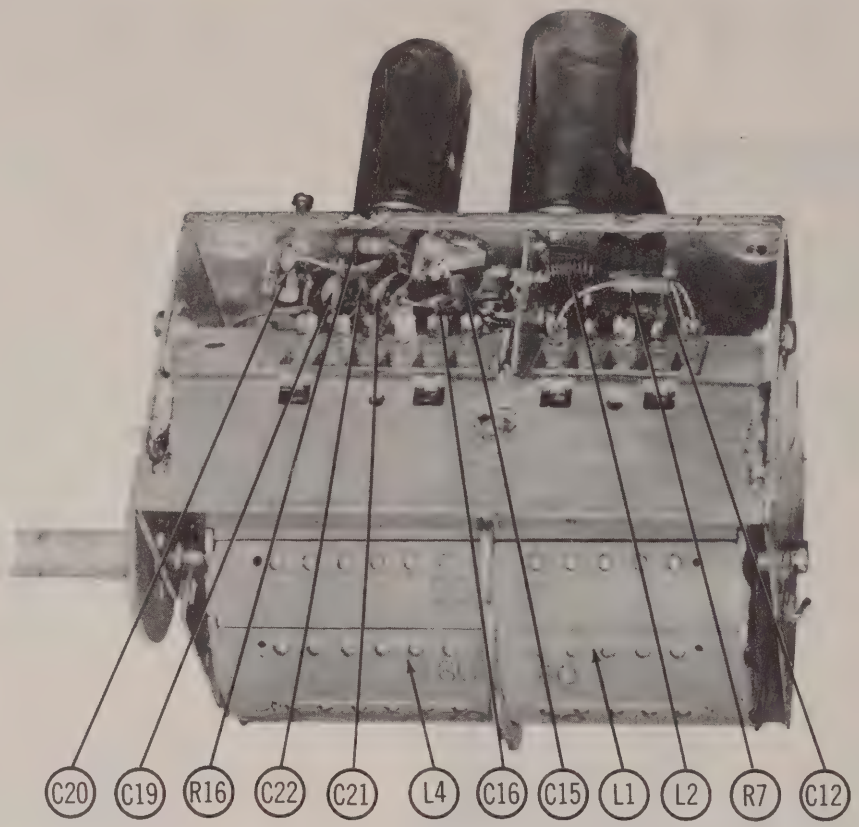
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BZ7	INF	1.5Meg	0Ω	.1Ω	0Ω	†12KΩ	†175KΩ	INF	0Ω
V 2	6J6	ǂ16KΩ	†16KΩ	.1Ω	0Ω	230KΩ	10KΩ	0Ω		
V 3	6CB6	1.5Meg	47Ω	0Ω	.1Ω	ǂ470Ω	ǂ470Ω	0Ω		
V 4	6CB6	1.5Meg	47Ω	0Ω	.1Ω	ǂ470Ω	ǂ470Ω	0Ω		
V 5	6CB6	.3Ω	180Ω	.1Ω	0Ω	ǂ1KΩ	ǂ1KΩ	0Ω		
V 6	6AL5	.840Ω	.3Ω	0Ω	.1Ω	8.2KΩ	0Ω	470KΩ		
V 7	6AH6	8.3KΩ	230Ω	0Ω	.1Ω	†28KΩ	†15KΩ	230Ω		
V 8	12AU7	ǂ1.5Meg	0Ω	270KΩ	0Ω	0Ω	ǂ15KΩ	ǂ 1.5Meg	5.1KΩ	.1Ω
V 9	6AU6	ǂ40KΩ	ǂ1KΩ	ǂ.1Ω	ǂ0Ω	†1KΩ	†43KΩ	ǂ1KΩ		
V 10	6T8	INF	ǂ36KΩ	INF	ǂ.1Ω	ǂ0Ω	ǂ0Ω	ǂ0Ω	ǂ470KΩ	†330KΩ
V 11	6V6GT	0Ω	ǂ.1Ω	†950Ω	†500Ω	230KΩ	135KΩ	ǂ0Ω	40KΩ	
V 12	6SN7GT	510KΩ	†2Meg	2.2KΩ	60KΩ	†100KΩ	2.2KΩ	.1Ω	0Ω	
V 13	6V6GT	0Ω	0Ω	†4KΩ	†4KΩ	2.2Meg	INF	.1Ω	2.2KΩ	
V 14	6AL5	560Ω	560Ω	0Ω	.1Ω	4.8Meg	0Ω	4.8Meg		
V 15	6SN7GT	95KΩ	†190KΩ	1.5KΩ	5.2Meg	†15.5KΩ	1.5KΩ	0Ω	.1Ω	
V 16	6BG6G	INF	.1Ω	82Ω	INF	470KΩ	INF	0Ω	9KΩ	Top Cap ▲85Ω
V 17	6W4GT	INF	▲4.5Ω	INF	INF	†74Ω	INF	ǂ0Ω	ǂ0Ω	
V 18	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								Top Cap ▲415Ω
V 19	5U4G	INF	19KΩ	INF	22.2Ω	INF	24.2Ω	INF	19KΩ	
V 20	21FP4A	0Ω	270KΩ	PIN 6 220KΩ	Pin 10 †56KΩ	Pin 11 220KΩ	Pin 12 .1Ω			

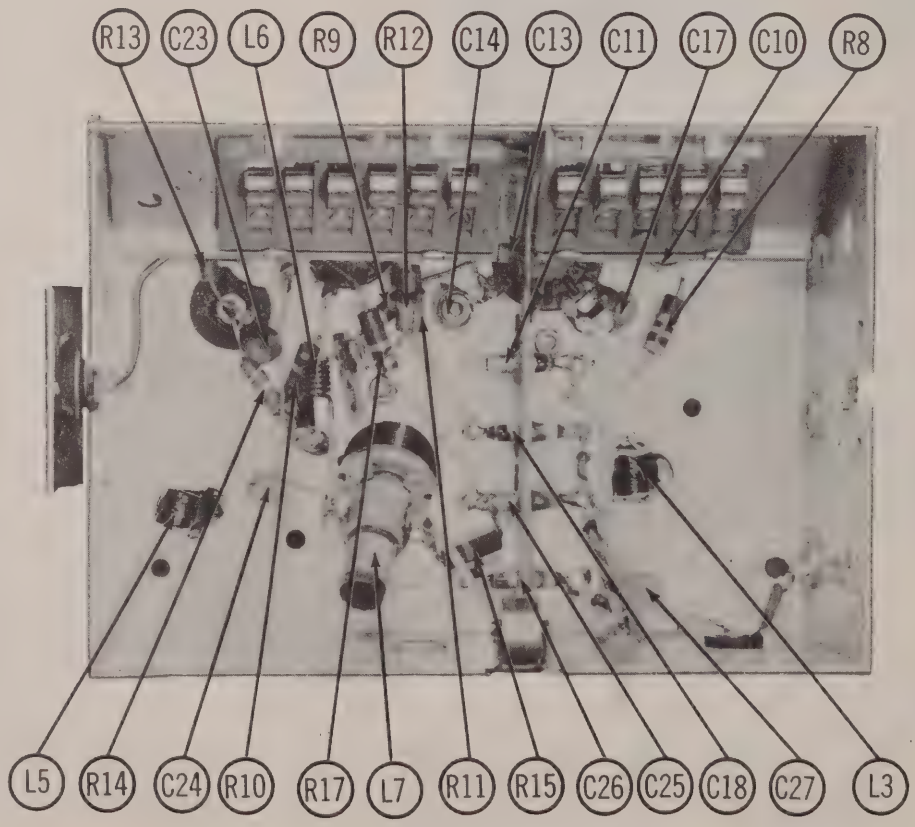
ǂ MEASURED FROM 130V LINE.
† MEASURED FROM PIN 8 OF V19.
▲ MEASURED FROM PIN 3 OF V17.



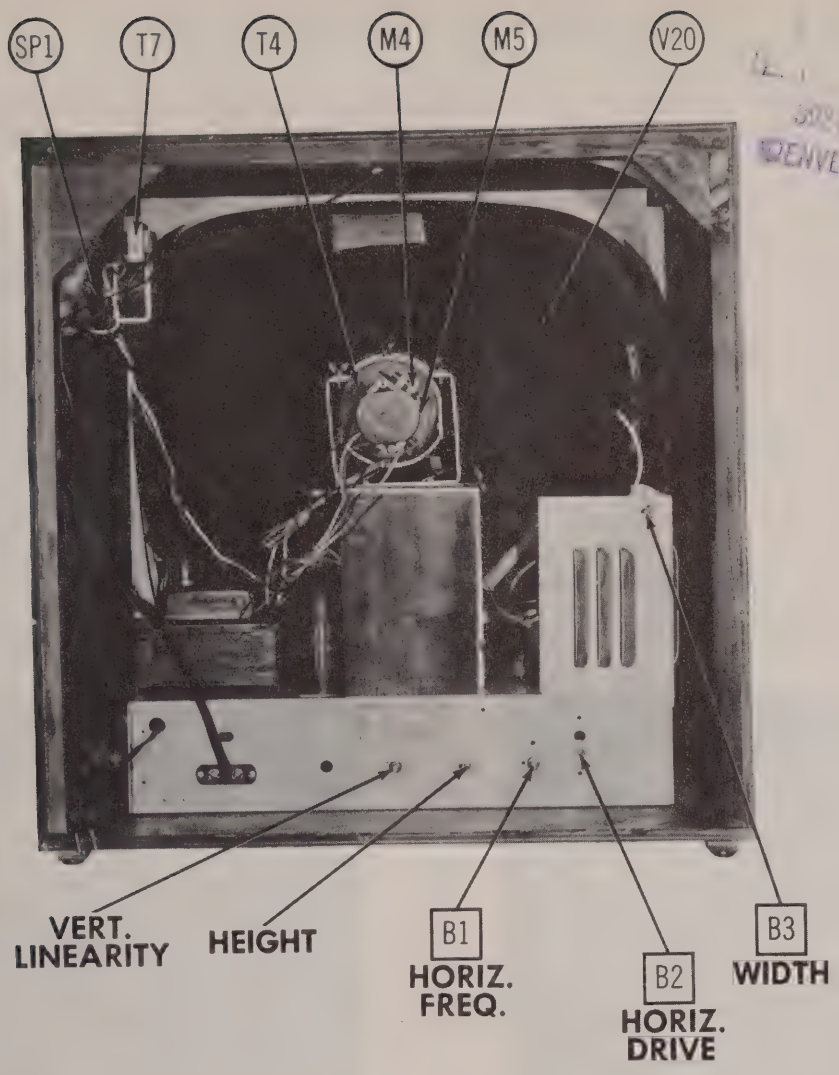
TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control to the center of its range.

Adjust the horizontal oscillator slug (B1) until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer (B2) counter clockwise as far as possible without the presence of vertical white lines or compression of the center of the picture.

Adjust the width slug (B3) for a picture slightly wider than necessary to fill the picture mask horizontally.

Adjust the horizontal linearity slug (B4) for a picture that is symmetrical from left to right.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

See LOSS OF HIGH VOLTAGE

INSUFFICIENT SWEEP

Check adjustment of width and drive controls. Check be substitution, V15, V16 V17 and V19. Check waveform W12;

If Unsatisfactory	If Satisfactory
Check components of horizontal oscillator and coupling network between V15 and V16,	Check components of horizontal output tube and damper, particularly C75, T2 and T4A.

DRIVE LINES

Check horizontal drive control B2. Check coupling network V73, C74 and R92.

COMPRESSED AT LEFT SIDE

Substitute V16 and V17, Check damper components.

XMAS TREE EFFECT

Substitute V15 and check C71 and L17. Check other ossociated components.

INTERMITTENT TEARING AND PIE CRUSTING (Fig. 1)

Substitute V15. Check C70.

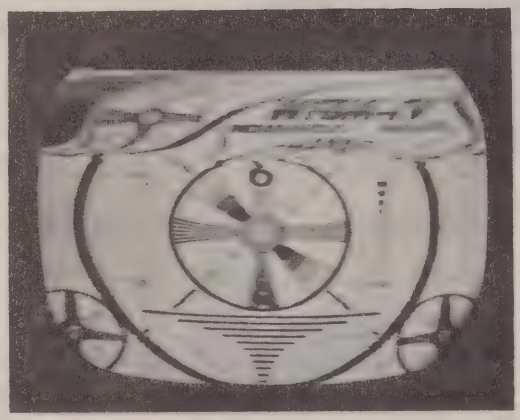


Fig. 1 INTERMITTENT TEARING AND PIE CRUSTING
See HORIZONTAL SWEEP

VERTICAL

LOSS OF SWEEP

Substitute V12 and V13. Check waveform W6;

If Unsatisfactory	If Satisfactory
Check components of V12 particularly C62, C65, C2A, and R73.	Check T3 and T4B. Check R78 for open. open.

INSUFFICIENT SWEEP

Substitute V12 and V13. Follow procedure outlined under LOSS OF SWEEP.

COMPRESSED AT BOTTOM

Check C65 for leaky condition. Check C3 in vertical output tube cathode circuit for open.

COMPRESSED AT TOP

If adjustment of height and vertical linearity controls fail to correct this condition, check C64 and R76 for change in value.

FOLDED AT TOP AND PARTIALLY INVERTED (Fig .2)

Check C64 fand R76 for open.

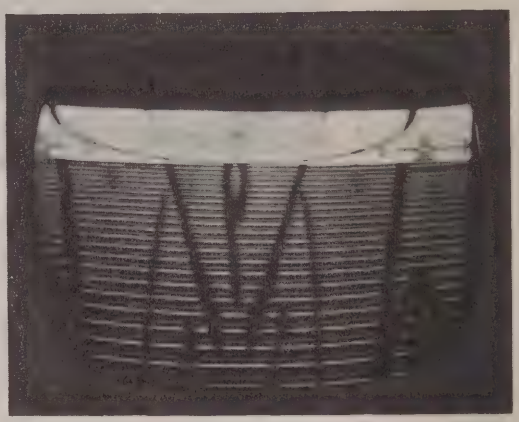


Fig. 2 FOLDED AT TOP AND PARTIALLY INVERTED
See VERTICAL SWEEP

SYNC

HORIZONTAL

LOSS OF SYNC

Check by substitution V8, V14 and V15. Check waveform W11;

If Unsatisfactory	If Satisfactory
Check waveform W10.	Check plate components of horizontal discharge tube. Check coupling network between V15 and V16.

Check waveform W10;

If Unsatisfactory	If Satisfactory
Check components of V14, especially, C66 and C67.	Check coupling network between V14 and V15. Check C71 and L17.

CRITICAL SYNC

Check by substitution V8, V14 and V15. Follow procedure outlined under LOSS OF SYNC.

PULLING PICTURE

Check by substitution V8, V14 and V15. Follow procedure outlined under LOSS OF SYNC.

VERTICAL

LOSS OF SYNC

Substitute V8 and V12. Check waveform W4;

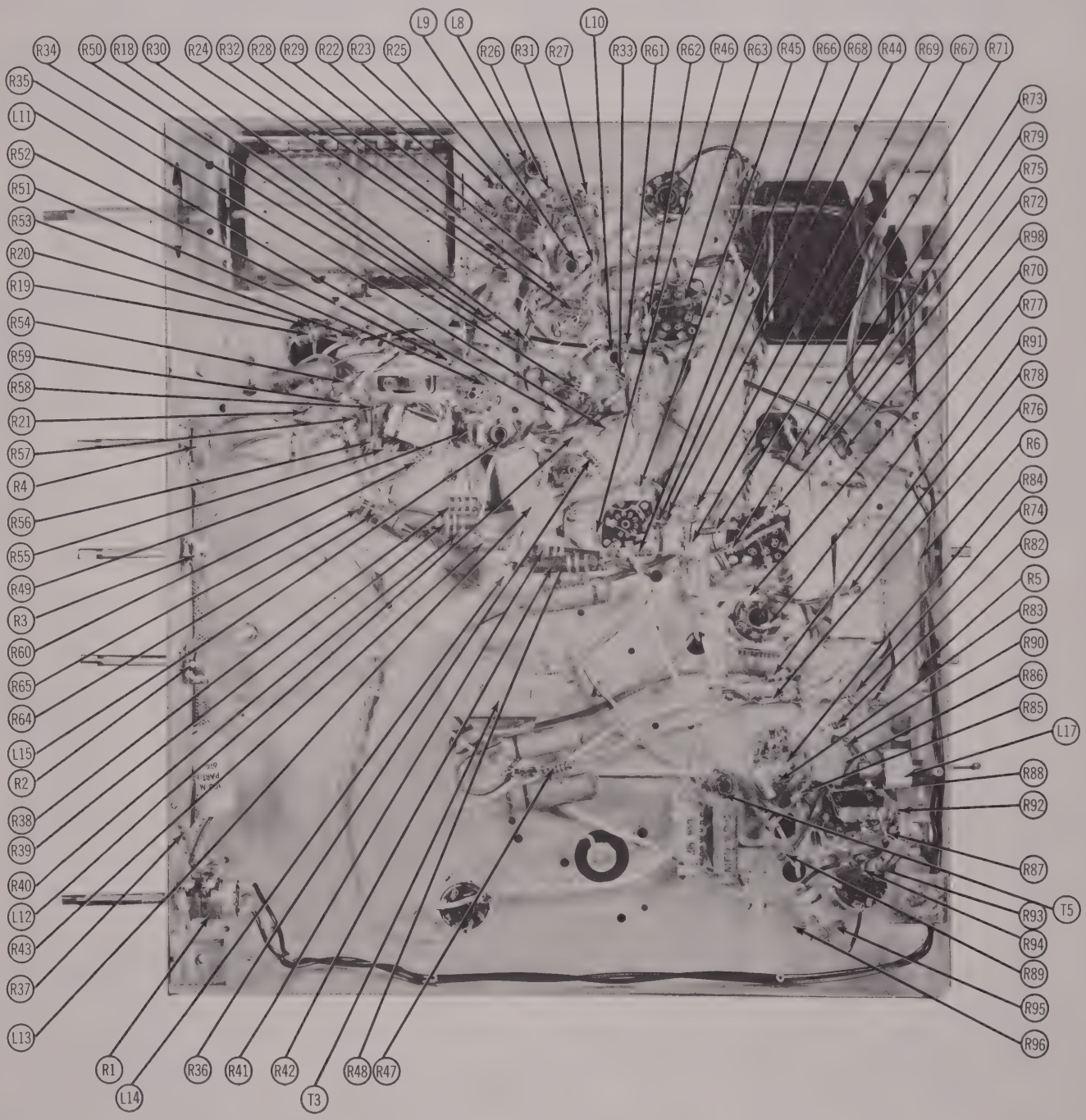
If Unsatisfactory	If Satisfactory
Check components of V8. Check integrating network C61 and R70.	Check components of V12 and check coupling and waveshaping network between V12 and V13.

CRITICAL HOLD

Substitute V8 and V12. Follow procedure outlined under LOSS OF SYNC.

TRIGGERING

Substitute V12. Check dressing of V12 grid leads clear of any filament leads.



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: DEWALD PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1A	RF Amplifier	6BZ7	6BZ7	9AJ	Directly Interchangeable
B	RF Amplifier	6BK7	6BK7	9AJ	
C	RF Amplifier	6BQ7	6BQ7	9AJ	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Detector-AGC Rectifier	6AL5	6AL5	6BT	
V7	Video Output	6AH6	6AH6	7BK	
V8	DC Restarer-Sync Phase Inv.	12AU7	12AU7	9A	
V9	Sound IF Amp.	6AU6	6AU6	7BK	
V10	Ratio Detector-AF Amplifier	6T8	6T8	9E	
V11	Audio Output	6V6GT	6V6GT	7S	
V12	Vert. Mult.	6SN7GT	6SN7GT	8BD	
V13	Vert. Output	6V6GT	6V6GT	7S	
V14	Horiz. AFC	6AL5	6AL5	6BT	
V15	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V16	Horiz. Output	6BG6G	6BG6G	5BT	
V17	Damper	6W4GT	6W4GT	4CG	
V18	HV Rectifier	1B3GT	1B3GT	3C	
V19	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No	REPLACEMENT DATA: DEWALD PART No	REPLACEMENT DATA: SYLVANIA PART No	RTMA BASE TYPE	NOTES
V20	21FP4A	21FP4A	12C	① Circuit changes necessary
		21FP4 ①	12C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	DEWALD PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	450		AFH2-57		BO45		FP238	TVL-2764	
B	▲40	450								
C2A	▲10	450		AFH3-142		D008		WP433.6	TVL-4723	
B	▲10	450								
C3	100	50		PRS50/100		BRH501		TC3501	TVA-1310	
C4	20	450		PRS450/20		BR2045A		TC75	TVA-1709	
C5	40	450		PRS450/40		BR4045A		TC78	TVA-1712	
C6	40	450		PRS450/40		BR4045A		TC78	TVA-1712	
C7	10	250		PRS250/12		BR1225A		TC52	TVA-1504	
C8	100	5		PRS8/100		BRH601		TC2501	TVA-1101	
C9	5	50		PRS150/4		BR550		TC30	TVA-1303	
C10	5-8				829-10					
C11	1000			CN-1-001	MFT-1000				503C-D1	
C12	2.2			SI2.2NP0	TCZ-2.2		NP0K-2R2		5TCCB-V22	
C13	1000			CN-1-001	MFT-1000				503C-D1	
C14	.5-3				829-3			CT565A		
C15	1.5			SIL.5NP0	TCZ-1.5		NP0K-1R5	ZT-5515	5TCCB-V15	
C16	47			BPD-000047	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C17	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C18	1000			CN-1-001	MFT-1000				503C-D1	
C19	47			BPD-000047	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C20	.5-3				829-3			CT565A		
C21	10			SI10NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C22	5			SI5N750	TCN-5		N750K-050		5TCU-V5	
C23	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C24	6.8			SI6.8NP0	TCZ-6.8		NP0K-6R8	ZT-5568	5TCCB-V68	
C25	1000			CN-1-001	MFT-1000				503C-D1	
C26	1000			CN-1-001	MFT-1000				503C-D1	
C27	120			BPD-00012	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C28	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	Note 1
C29	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C30	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C31	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	Note 2
C32	270	500								
C33	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C34	1500			SI1500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	
C35	1500			SI1500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	
C36	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C37	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C38	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C39	120			SI120	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C40	.25	200		P288-25		PTE4P25		PT4025	2TM-P25	
C41	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C42	5			SI5NP0	TCZ-4.7		NP0K-050	ZT-555	5TCUB-V5	
C43	680			SI680	D6-681		GP2K-681	UC-5368	5GA-T68	
C44	470			SI470	D6-471		GP2K-471	UC-5347	5GA-T47	
C45	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C46	.05	600		P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C47	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C48	2.5									
C49	47			SI47	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C50	68			SI68	D6-680		GP1K-680	UC-5468	5GA-Q68	
C51	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C52	.02	400		P488-02	DF-203	PTE4S2		PT412	4TM-S2	
C53	330			SI330	D6-331		GP2K-331	UC-5333	5GA-T33	
C54	1500			SI1500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	
C55	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C56	.005	400		P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C57	680			SI680	D6-681	1W5T7	GP2K-681	UC-5368	5GA-T68	
C58	.02	600		P688-02	DF-203	PTE6S2		PT612	6TM-S2	
C59	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C60	.005	600		P688-005	CK-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C61A	.01			P688-01		PTE6S1	GP2-333-103	PT611	6TM-S1	
B	.002			P688-002	●PC-101	PTE6D2	GP2-333-202	PT622	6TM-D2	
C	.005			P688-005		PTE6D5	GP2-333-502	PT625	6TM-D5	
D	.005			P688-005		PTE6D5	GP2-333-502	PT625	6TM-D5	

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	DEWALD PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C62	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C63	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C64	.035	400								
C65	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C66	1500			SI1500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	
C67	1500			SI1500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	
C68	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C69	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C70	.05	200		P288-05	DF-503	PJ2B5		PT415	2TM-S5	
C71	4300	500								
C72	330	500								
C73	680			SI680	D6-681		GP2K-681	UC-5368	5GA-T68	
C74	.002	600		P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C75	.05	600		P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C76	.25	200		P288-25		PJ2P25		PT4025	2TM-P25	
C77	.05	600		P688-05		PTE6S5		PT615	6TM-S5	
C78	.035	600								
C79	500	20000		HV-11	TV4-502	MM-F20T5	413-501		20DK-T5	
C80	56	2000								
C81	.01	400		489ZK-01		PJ4S1		PT411	4TM-S1	
C82	.01	400		489ZX-01		PJ4S1		PT411	4TM-S1	
C83	.02	600		P688-02	DF-203	PTE6S2		PT612	6TM-S2	

Note 1. Not used in all Models.
Note 2. Some Models use 1500MMF in this application.
● Items C61A, C61B, C61C, C61D, R70A, R70B, R70C, R70D are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	DEWALD PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	750Ω	½	3039A-2	QJ-452 *			UF751-T251	Contrast-tapped ⑨ 600Ω-Panel
B	1Meg	½					UR16A	Volume-Rear
C	Switch						US-26	Attach to R1B
R2A	100KΩ	½	3031A-13	QU-128	AG-49-S	AB-40	U-41	Brightness
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R2A
R3A	30KΩ	½	3031A-14	QU-121	AG-42-S	AB-26	U-35	Horiz. Hold
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R3A
R4A	1Meg	½	3031A-8	QU-137	AG-61-S	AB-69	U-54	Vert. Hold
B			Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R4A
R5A	2.5Meg	½	3031A-5	QU-239	AG-84-S	AB-53	SU-565	Height
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R5A
R6A	5000Ω	½	3031A-4	QU-114	AG-19-S	AB-10	SU-14	Vert. Linearity
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R6A

* CONCENTRIKIT EQUIVALENT - KIT K-2, BASE ELEMENTS & SHAFTS B17-105X & P1-204 (Panel), B13-137 & R1-220 (Rear) & SWITCH 76-1.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	DEWALD PART No.	IRC PART No.	NOTES
R7	15KΩ	½		BTS-15K	
R8	47KΩ	½			
R9	100KΩ	½			
R10	180KΩ-5%	½			
R11	150Ω	½		BTS-1500	
R12	100KΩ-5%	½		BTS-100K-5%	
R13	10KΩ	½		BTS-10K	
R14	220KΩ	½		BTS-220K	
R15	15KΩ	½			
R16	10KΩ	1		BTS-10K	Note 1
R17	15KΩ	2			Note 1
R18	1000Ω	½		BTS-1000	
R19	22KΩ	2		BTB-22K	
R20	22KΩ	2		BTB-22K	
R21	39KΩ	2		BTB-39K	
R22	2700Ω	½		BTS-2700	
R23	47Ω	½		BTS-47Ω	
R24	470Ω	½		BTS-470	
R25	330Ω	½		BTS-330	
R26	15KΩ	½			
R27	47Ω	½		BTS-47	
R28	470Ω	½		BTS-470	
R29	330Ω	½		BTS-330	
R30	1 Meg	½		BTS-1 Meg	
R31	6800Ω	½		BTS-6800	
R32	180Ω	½		BTS-180	
R33	1000Ω	½		BTS-1000	
R34	470KΩ	½		BTS-470K	
R35	8200Ω	½		BTS-8200	
R36	120Ω	½			
R37	120Ω	½		BTS-120	
R38	22KΩ	2		BTB-22K	
R39	47KΩ	2		BTB-47K	
R40	47KΩ	2		BTB-47K	
R41	56KΩ	2		BTB-56K	
R42	56KΩ	2		BTB-56K	
R43	5600Ω	1		BTA-5600	
R44	1.5Meg	½		BTS-1.5Meg	
R45	270KΩ	½		BTS-270K	
R46	2200Ω	½		BTS-2200	
R47	180KΩ	½		BTS-180K	
R48	220KΩ	½		BTS-220K	
R49	39KΩ	½		BTS-39K	
R50	1000Ω	½		BTS-1000	
R51	50KΩ	½			
R52	100KΩ	½		BTS-100K	
R53	1000Ω	½		BTS-1000	
R54	47KΩ	½		BTS-47K	

ITEM No.	RATING: OHMS	RATING: WATT	DEWALD PART No.	IRC PART No.	NOTES
R55	18KΩ	½		BTS-18K	
R56	18KΩ	½		BTS-18K	
R57	4700Ω	½		BTS-4700	
R58	470KΩ	½		BTS-470K	
R59	470KΩ	½		BTS-470K	
R60	330KΩ	½		BTS-330K	
R61	330KΩ	½		BTS-330K	
R62	100KΩ	½		BTS-100K	
R63	180KΩ	½		BTS-180K	
R64	1000Ω	1		BTA-1000	Note 1
R65	680Ω	2		BTB-680	Note 1
R66	3300Ω	½		BTS-3300	
R67	1800Ω	½		BTS-1800	
R68	10KΩ	½		BTS-10K	
R69	4700Ω	½		BTS-4700	
R70A	22KΩ	½	•	BTS-22K	
B	22KΩ	½	•	BTS-22K	
C	8200Ω	½	•	BTS-8200	
D	8200Ω	½	•	BTS-8200	
R71	2200Ω	½		BTS-2200	
R72	100KΩ	½		BTS-100K	
R73	270KΩ	½		BTS-270K	
R74	680KΩ	½		BTS-680K	
R75	56KΩ	½		BTS-56K	
R76	8200Ω	½		BTS-8200	
R77	2.2Meg	1		BTS-2.2Meg	
R78	390Ω	1		BTA-390	
R79	3300Ω	1		BTA-3300	
R80	560Ω	1		BTS-560	
R81	560Ω	½		BTS-560	
R82	560Ω	½		BTS-560	
R83	100KΩ	½		BTS-100K	
R84	100KΩ	½		BTS-100K	
R85	4.7Meg	½		BTS-4.7Meg	
R86	470KΩ	½		BTS-470K	
R87	1500Ω	½		BTS-1500	
R88	5600Ω	½		BTS-5600	
R89	82KΩ	½		BTS-82K	
R90	180KΩ	½		BTS-180K	
R91	10KΩ	1		BTA-10K	
R92	470KΩ	½		BTS-470K	
R93	100Ω	½			
R-4	82Ω	2		BW-2-82	
R95	5600Ω	1		BTA-5600	Note 2
R96	3300Ω	1		BTA-3300	Note 2
R97	1 Meg	1			
R98	10Ω	2			

Note 1. Some models use a single 390Ω (1 Watt) resistor in this application.
Note 2. Some models use a single 9200Ω resistor in this application.
• Items R70A, R70B, R70C, R70D, C61A, C61B, C61C, C61D are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: DEWALD PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: TRIAD PART No.	REPLACEMENT DATA: RCA TYPE No.
T1	117VAC ⑨ 1.94A	714VCT .210ADC	5VAC ⑨ 3A	6.3VAC ⑨ 1.2A SEC 4 6.3VAC ⑨ 6.1A	1130B-1		P-8163①	P-3078	TP-360①	R-37BC 201T10 ⑤

① Drill new mounting holes.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: DEWALD PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.	NOTES
T2	375Ω Tap ⑨ 45Ω	10.5Ω Tap ⑨ .5Ω 7.5Ω SEC 2 0Ω	1120A-2	A-8130①②	HVO-10	TFB-5③	D-14④⑤	231T1⑩①	Horiz. Output Trans.
T3	745Ω Tap ⑨ 10Ω		1110-4	A-8123	A-3037	TSO-8 ⑥	A-102X	204T2⑥	Vert. Output Trans.
T4A	12Ω		1121D-3	DY-9A	MDF-70	TY-5	Y-21	206D1	Horiz. Deflection Coils
B	60Ω			WC-5⑦⑧	MWC-1⑦⑧	TWL-1	WC-11③	201R3	Vert. Deflection Coils
T5	40Ω			WC-4	MWC-2 ⑦	TW-2		201R4	Horiz. Lin. Coil
T6	.6Ω								Width Coil

① Use with width coil WC-5.
② See instruction sheet packed with unit (Schematic 3) for terminal connections.
③ Use with width coil TWL-1.
④ Connect term "P" to term "2".
⑤ Use with width coil (Primary only) WC-11.
⑥ Connect as auto transformer.
⑦ Enlarge mounting hole.
⑧ Do not use secondary.
⑨ Connect to coded blue & red terminals.
⑩ See instructions sheet packed with unit for terminal connections.
⑪ Use with width coil 21JR1.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: DEWALD PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T7	7KΩ	3.3Ω	456Ω	.55Ω	1132-1	A-3849①	A-2902 ①	RO-302	S-9X ①	①Drill one new mtg. hole.

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: DEWALD PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	NOTES
SP1	5"	66.5Ω	3.3Ω	7018A-4		5E668	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: DEWALD PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Ant. Coils	0Ω CT	0Ω					
L2	Neutr. Coil	0Ω						
L3	Fil. Choke	0Ω						
L4	RF, Mixer Grid & Osc. Coils	0Ω						
L5	Fil. Choke	0Ω						
L6	RF Choke	0Ω						
L7	1st. Video IF	1Ω			19-1020	TV-112 *	6171 *	
L8	2nd. Video IF	.3Ω		1084	17-1003	TV-102 *	6188 *	
L9	3rd. Video IF	.3Ω	.3Ω	1134	17-1063			
L10	4th. Video IF	.3Ω	.3Ω	1134	17-1064			
L11	Series Peaking Coil	7.5Ω			19-3125		4564	120 Microhenries
L12	Shunt Peaking Coil	18Ω			19-3860		4650	600 Microhenries
L13	Series Peaking Coil	12Ω			19-4250	TV-187	6173	275 Microhenries, wound on 22KΩ resistor
L14	Shunt Peaking Coil	14.5Ω			19-1923		4648	400 Microhenries
L15	Sound IF	1.7Ω			17-3401	TV-151	1469	
L16	Ratio Det.	4.2Ω	.5Ω CT	1114	17-1033	TV-110	1468	Tertiary Winding - .65Ω
L17	Horiz. Osc.	110Ω			19-1576	TV-163	6210	

* Enlarge mounting hole.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: DEWALD PART No. FUSE	DEWALD PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG-P/T	2/10A⑨ 250VAC					MDV-2/10	
M2	Length of #24 wire.							

MISCELLANEOUS

ITEM No.	PART NAME	DEWALD PART No.	NOTES
M3	RF Tuner		
M4	Centering Magnet		
M5	Ion Trap		
B2	Trimmer		Horiz. Drive (40-370MMF)

DENVER, COLORADO

TROUBLE SHOOTING AIDS (CONT.)

PROPERTY OF
L. F. BLANKENSHIP
MEADE ST.
DENVER, COLORADO

VIDEO

SOUND BARS

Check adjustment of A5. Check setting of local oscillator and alignment of video IF stages.

POOR RESOLUTION

Check alignment of tuner and IF stages. Substitute V7 and check associated components.

SMEAR

Substitute V7 and check associated components.

WIDE BLACK BAR ACROSS PICTURE

Check tuner, video IF, video detector and video amplifier tubes for filament to cathode leakage.

POOR CONTRAST

Check by substitution, tuner, video IF and video amplifier tubes.

Check waveform W2;

If Unsatisfactory	If Satisfactory
Check alignment of tuner and video IF stages. Check components of V7 and V8.	Check picture tube. and check cathode circuit components.

AUDIO

WEAK OR NO SOUND

Check by substitution, V9, V10 and V11. Check circuit components. Check alignment of sound and video IF.

BUZZ

Adjust ratio detector secondary for minimum buzz. If still objectionable, substitute V10. Check local oscillator setting. Check for overload at W1. If overload exists, check AGC network.

DISTORTED

Check V10B and V11 using audio signal generator and scope;

If Undistorted	If Distorted
Check alignment of sound IF and discriminator.	Substitute tube and check components of stage where discortion occurs.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check 1/4 Amp. fuse located in damper circuit.
Check by substitution V15, V16, V17 and V18,

Check waveform W12;

If Unsatisfactory	If Satisfactory
Check components of V15. Check coupling network between V15 and V16.	Check components of V16. Check T2, T4A, T5 and T6. Check com - ponents of damper and high voltage filter.

INSUFFICIENT HIGH VOLTAGE

Substitute V15, V16, V17, V18 and V19, Follow procedure outlined under LOSS OF HIGH VOLTAGE.

BLOOMING

Substitute V15, V16, V17, V18 and V19. Check picture tube. Follow procedure outlined under LOSS OF HIGH VOLTAGE.

POWER

SET DEAD

Substitute V19. Check T1 and filter components. Check connections of speaker plug.

SMALL RASTER AND WEAK SOUND

Substitute V19. Check filter components. Check set for shorts.

DIM PICTURE

Follow procedure outlined under BLOOMING and under SMALL RASTER AND WEAK SOUND.

GENERAL

RASTER BUT NO SOUND OR PICTURE

Check by substitution, V2, V5, V6 and V7. Check components and alignment of these stages.

WEAK PICTURE AND WEAK SOUND

Substitute V3 and V4. Check associated components.

SNOWY PICTURE

Substitute V1 and Ccheck components.

SOUND AND RASTER BUT NO PICTURE

Substitute V7 and check associated components.

COMPLETE LOSS OF SYNC

Substitute V8 and check circuit components.

The Trouble-Shooting photographs shown above are made with permission of transmitting station WFBM-TV and in no way reflect the quality of the transmitted picture. Similarly, symptoms shown are assumed and are not indicative of the quality and workmanship of this receiving equipment.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the RF tuner oscillator circuit may be accomplished by removal of the channel selector and fine tuning knobs. The adjustments are accessible, one at a time, through the small hole in the cabinet to the right of the channel selector shaft.

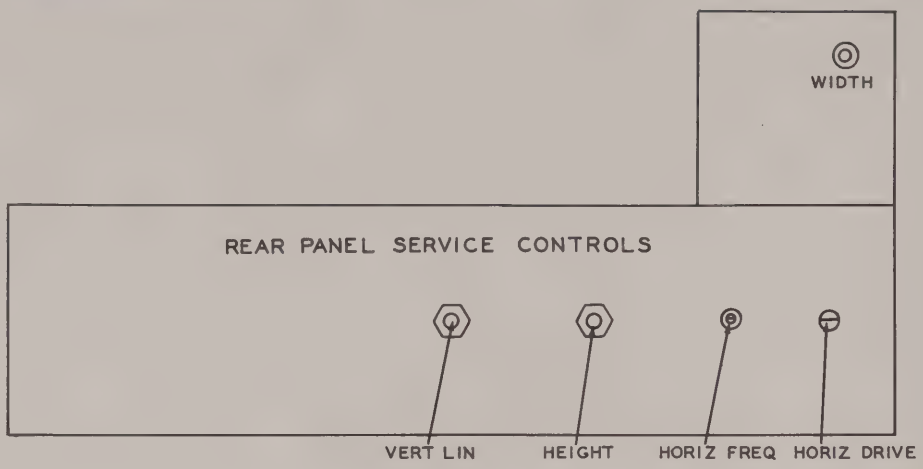
PICTURE TUBE SAFETY GLASS CLEANING

For picture tube safety glass cleaning, it is necessary to remove chassis. (See disassembly instructions).

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION



HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjust of the horizontal oscillator circuit can be made from the rear panel of the chassis. Set the horizontal hold control at the mid-position of its range and adjust the horizontal oscillator slug until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (L16) located on top of chassis. (See tube placement chart).

FUSES

Two fuses are used. One for horizontal sweep circuit protection and one for tuner filament supply protection. (For location, see tube placement chart.

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

DISASSEMBLY INSTRUCTIONS

1. Remove 7 push on type control knobs from front panel.
2. Remove 5 wood screws. Remove rear cover.
3. Disconnect built-in antenna and speaker plug.
4. Remove 2 wing nuts. Remove speaker.
5. Remove 4 chassis bolts. Remove chassis.

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DENVER, COLORADO

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FLEETWOOD
MODEL 600

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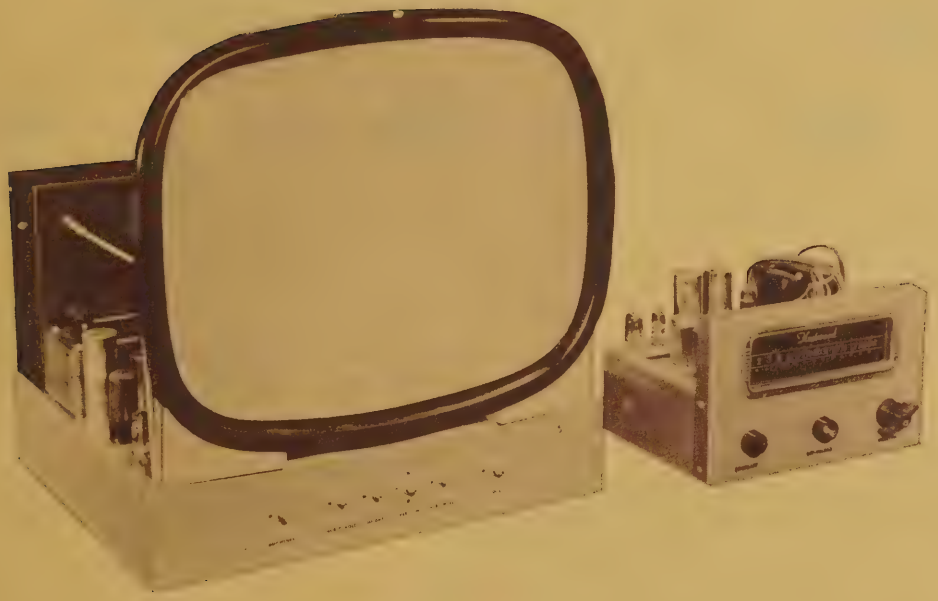

FLEETWOOD
MODEL 600

MODEL 600

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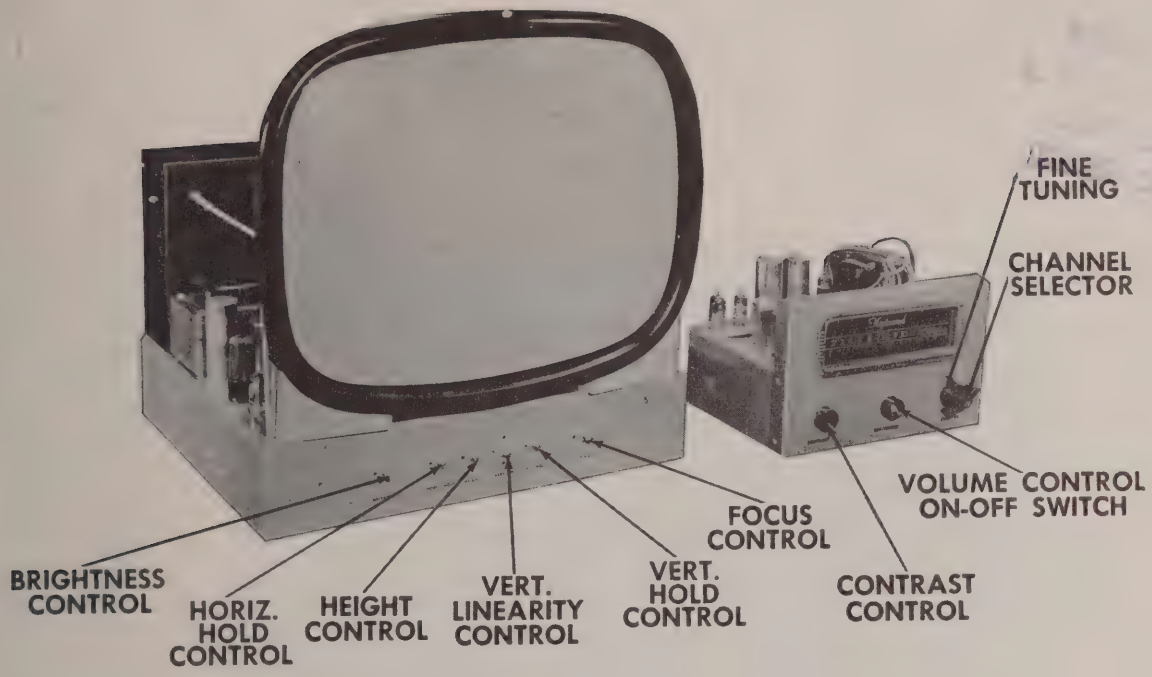
DATE 7–53 SET 209 FOLDER 4



FLEETWOOD
MODEL 600

TRADE NAME	Fleetwood Model 600
MANUFACTURER	Conrac Inc., 649 W. Foothill Blvd., Glendora, Calif.
TYPE SET	Television Receiver
TUBES	Twenty-Seven

POWER SUPPLY 110-120 Volts AC-60 Cycle RATING 2.2 Amp @ 117 Volts AC
TUNING RANGE—Channels 2 thru 13, Video IF 25.75MC , Sound IF 21.25MC (Intercarrier).

INDEX

Alignment Instructions 6, 7
Horizontal Sweep Circuit Adjustments 11
Parts List and Descriptions ..... 15 thru 18
Photographs
Chassis-Rear View (Sweep Chassis) 11
Capacitor and Alignment Identification (RF IF Chassis) 4
Capacitor Identification (Sweep Chassis) 12, 21
Chassis-Top View (RF IF Chassis) 3
Chassis-Top View (Sweep Chassis) 13
High Voltage Compartment 20
RF Tuner 10
Photographs (Cont)
Resistor and Inductor Identification (RF IF Chassis) 9
Resistor and Inductor Identification (Sweep Chassis)... 23, 24
Resistance Measurements 8
Servicing in the Field 22
Schematic 2
Trouble Shooting Aids 14, 19
Tube Failure Check Chart 5
Tube Placement Chart (Bottom View) 8
Tube Placement Chart (Top View) 5

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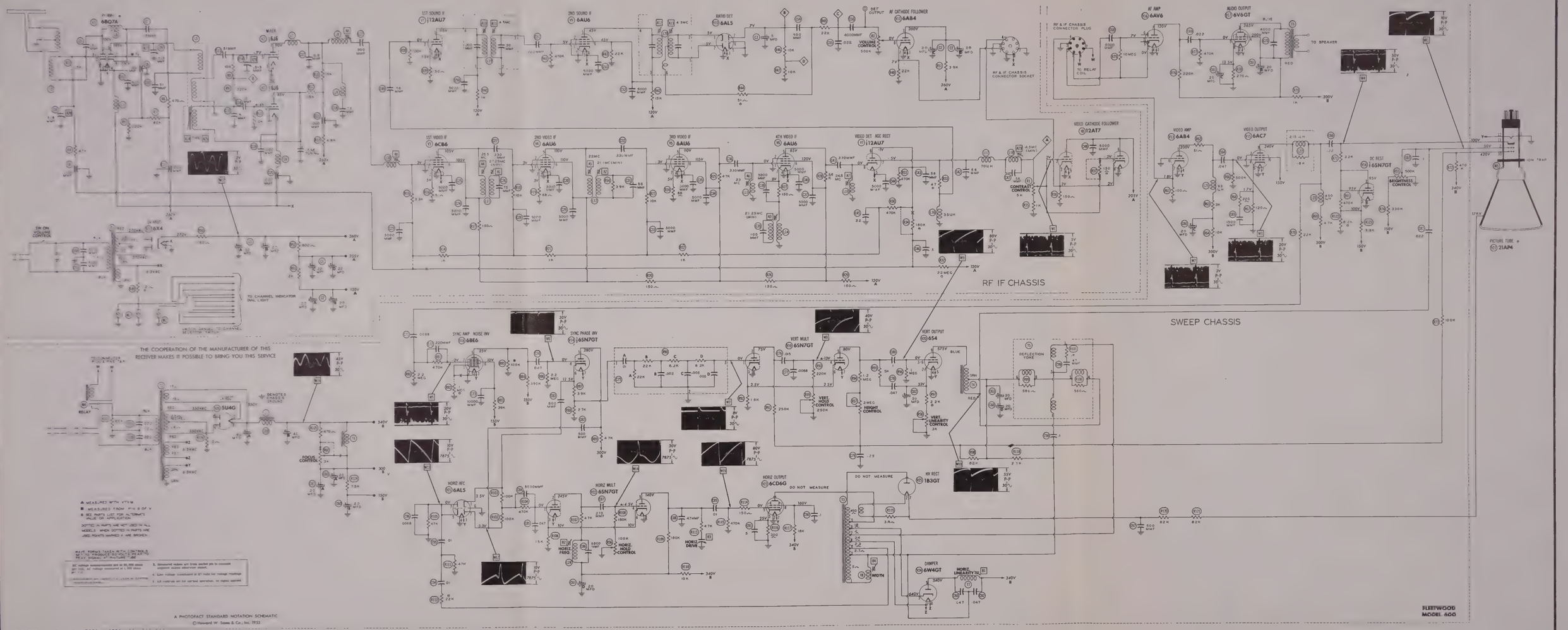
RF IF CHASSIS
SWEEP CHASSIS
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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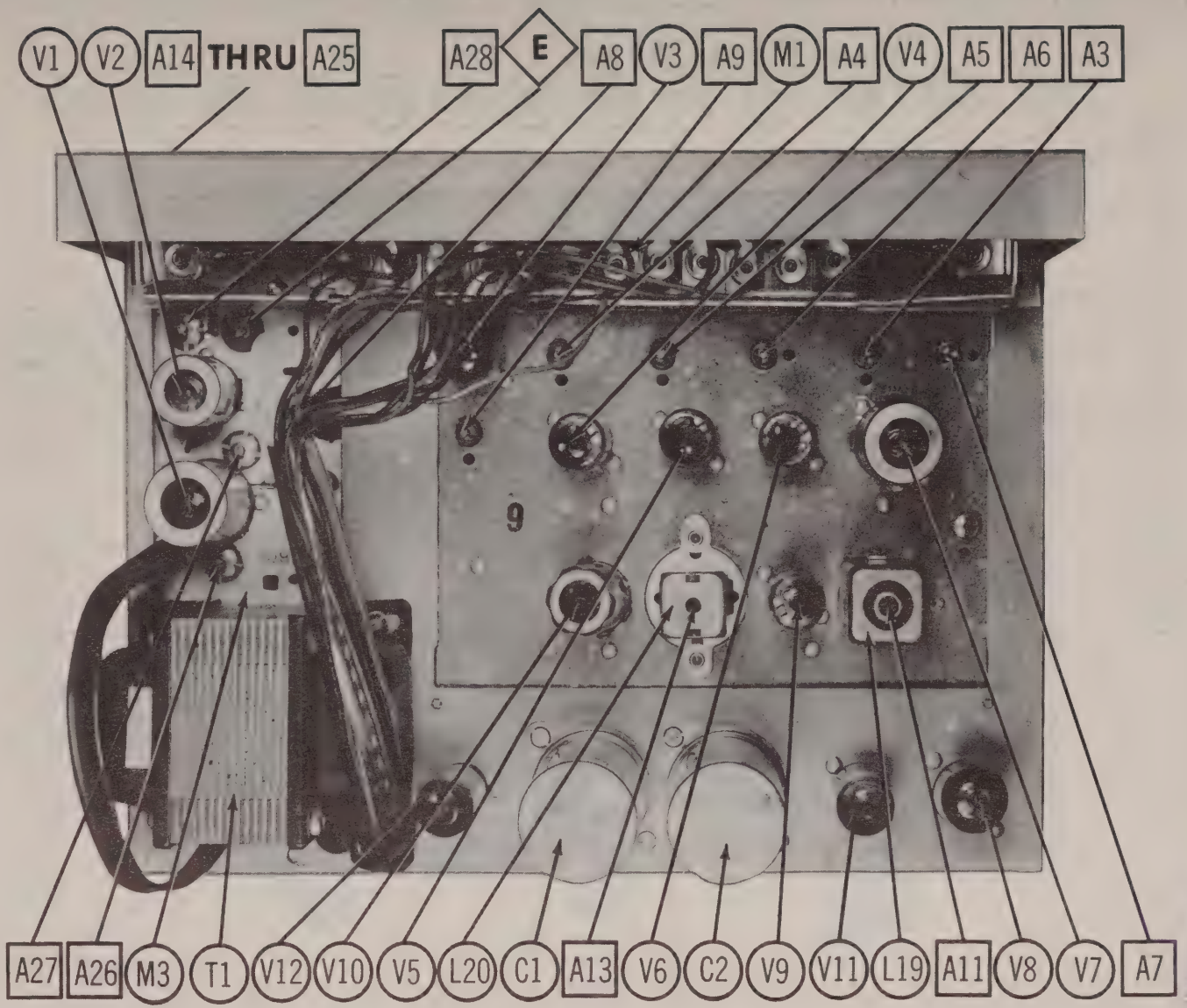
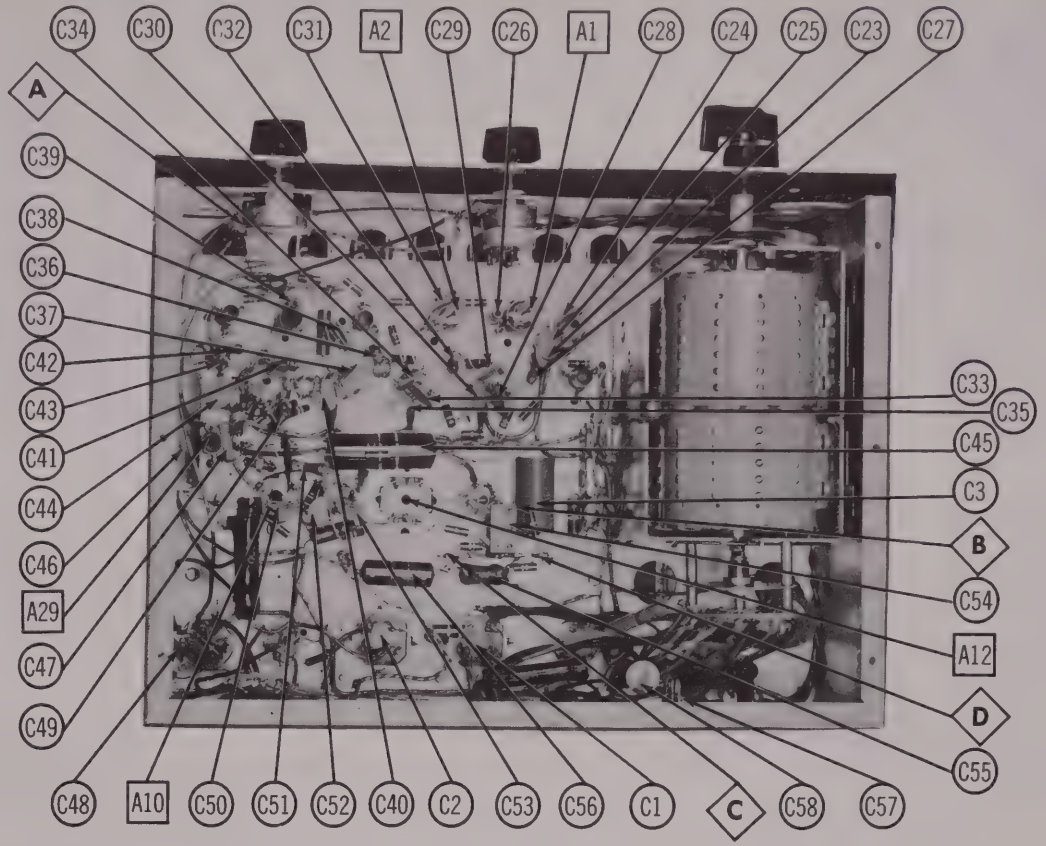
FLEETWOOD MODEL 600

FLEETWOOD MODEL 600



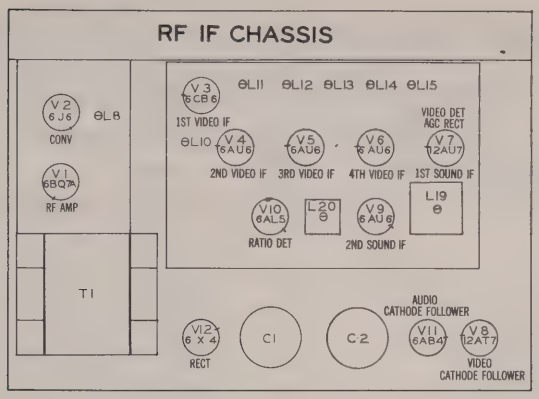
RF-IF CHASSIS-TOP VIEW

DENVER, COLORADO
3836 ELIZABETH ST.

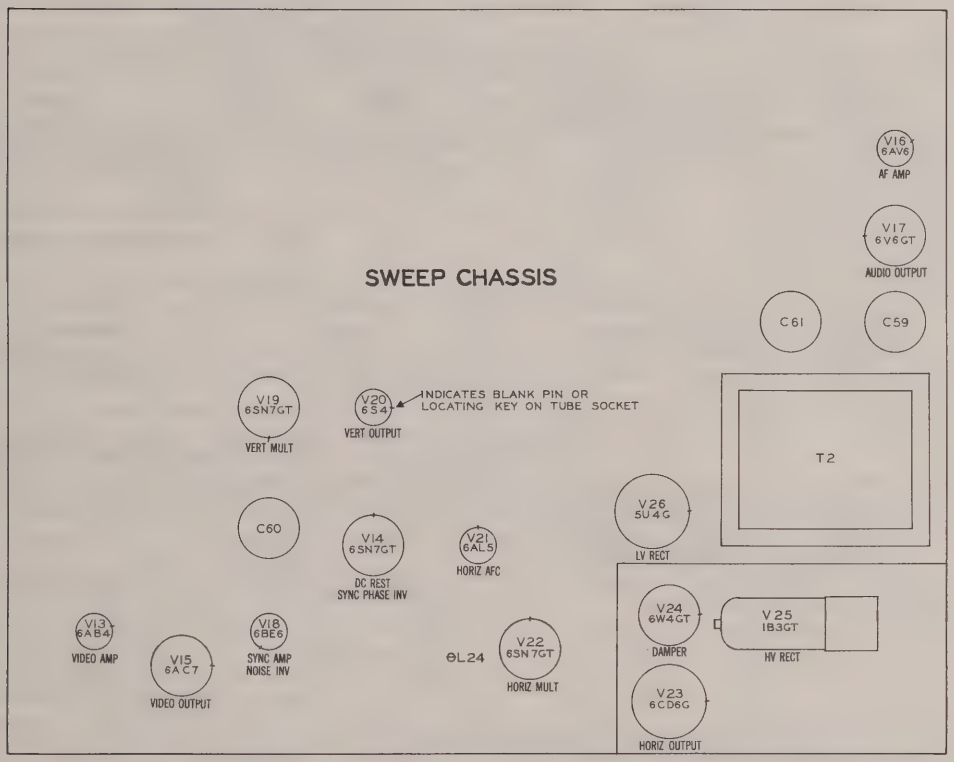


RF-IF CHASSIS-BOTTOM VIEW-CAPACITOR & ALIGNMENT IDENTIFICATION

TUBE PLACEMENT CHART



TOP VIEW



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V12, V26, Relay (M3)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5, V6, V7
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V8, V13, V15
Has pic, no sound -V7, V9, V10, V11, V16, V17
Overloaded picture - V7

SYNC FAILURE
No vert. sync - V14, V19
No horiz. sync - V14, V21, V22
No vert. or horiz. sync - V14, V18

SWEEP FAILURE
No raster, has sound - V22, V23, V24, V25, V27
No vertical deflection - V19, V20
Poor vert. linearity or foldover - V19, V20
Poor horiz. linearity or foldover - V22, V23, V24
Narrow picture - V22, V23, V24, V25, V26
Vert. off freq. - V14, V19
Horiz. off freq. - V14, V21, V22

DENVER, COLORADO

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard can be eliminated by removing the horizontal oscillator tube, V22.

VIDEO IF ALIGNMENT

Remove the converter tube, V2, and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the ungrounded side of C45. Connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	27.25MC	Any	DC probe to point (A). Common to chassis.	A1	Adjust for MINIMUM deflection.
2.	"	"	21.1MC	"	"	A2	"
3.	"	"	21.25MC	"	"	A3	"
4.	"	"	25.5MC	"	"	A4	Adjust for maximum deflection.
5.	"	"	22.0MC	"	"	A5	"
6.	"	"	23.0MC	"	"	A6	"
7.	"	"	24.5MC	"	"	A7	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	24MC (10MC Swp)	21.25MC 22.0MC 23.7MC 25.75MC 27.25MC	Any	Vert. Amp. to point (A). Low side to chassis.	A8	Check for response similar to Fig. 1. If necessary retouch A4 thru A7 for desired response. Adjust A8 to produce a dip at 23.7MC.
9.	.01MFD	High side to junction of C22 and L10. Low side to chassis.	"	23.7MC	"	"	A9	Adjust for maximum response at 23.7MC.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	.01MFD	High side to junction of R33 and L16. Low side to chassis.	4.5MC (Unmod.)	Any	DC probe to point (B). Common to chassis.	A10, A11, A12	Adjust for maximum deflection.
11.	"	"	"	"	DC probe to point (C). Common to point (D).	A13	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	.01MFD	High side to junction of R33 and L16. Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. Amp. to point (B). Low side to chassis.	A10, A11, A12	Disconnect stabilizer capacitor C3. Adjust for curve of maximum amplitude and symmetry as in Fig. 2.
11.	"	"	"	"	"	Vert. Amp. to point (C). Low side to chassis.	A13	Reconnect capacitor C3. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 3. SLIGHTLY retouch A12 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket. Connect the 3 volt bias battery as under Video IF Alignment.
The channel oscillator adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. to point (A). Low side to chassis.	A14	Adjust to place sound marker in trap notch as in Fig. 4. Video marker should be at 50%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A15	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A16	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A17	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A18	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A19	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A20	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A21	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A22	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A23	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A24	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A25	

ALIGNMENT INSTRUCTIONS (CONT.)

RF AND MIXER ALIGNMENT

Leave bias battery connected as under Oscillator Alignment.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	1 2	Vert. Amp. thru 10KΩ to point (E). Low side to chassis.	A26 A27 A28	Adjust for response curve similar to Fig. 5.
14.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check for response similar to Fig. 5. If markers fall below 70% on any channel make slight compromise adjustments of A26, A27 and A28 with channel switch set to that channel then check all other channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

4.5MC TRAP ALIGNMENT

Turn the set on and tune in a TV station.
Turn the fine tuning control counter clockwise until sound interference is noted in the picture. Adjust A29 to minimize the interference.

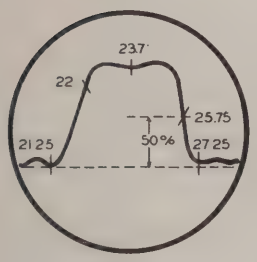


FIG. 1

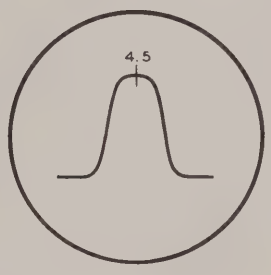


FIG. 2

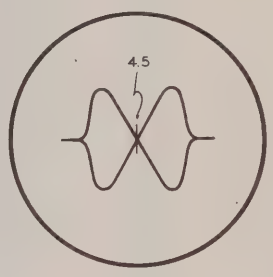


FIG. 3

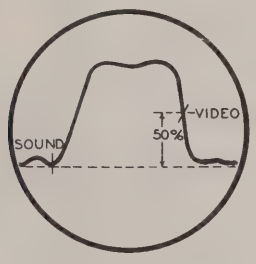


FIG. 4

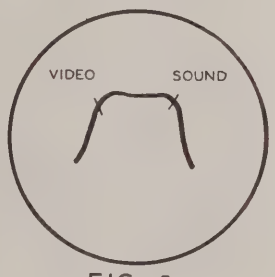
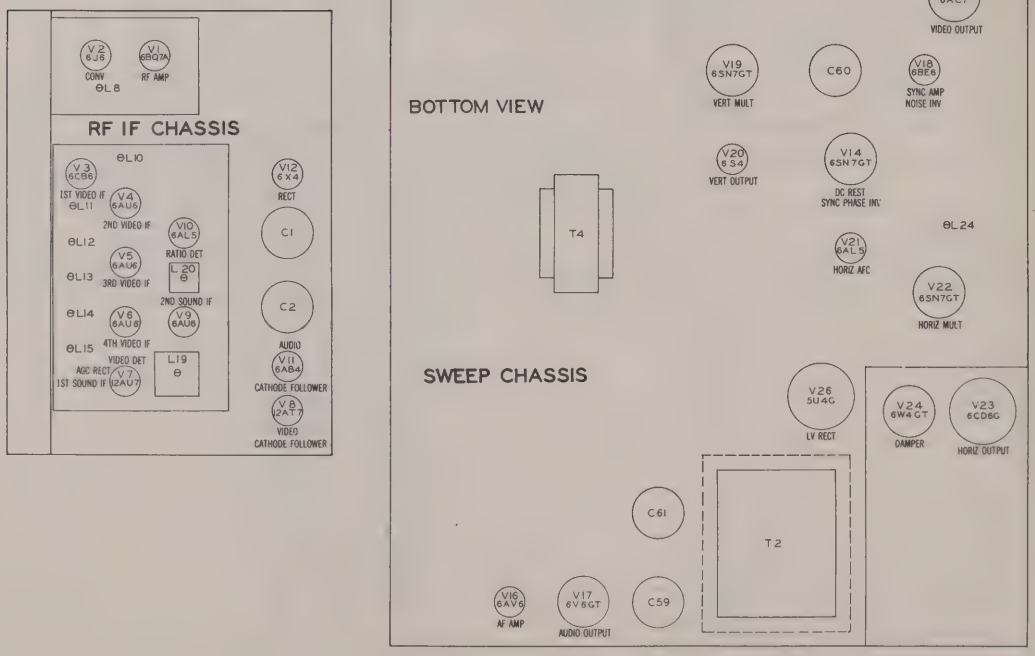


FIG. 5

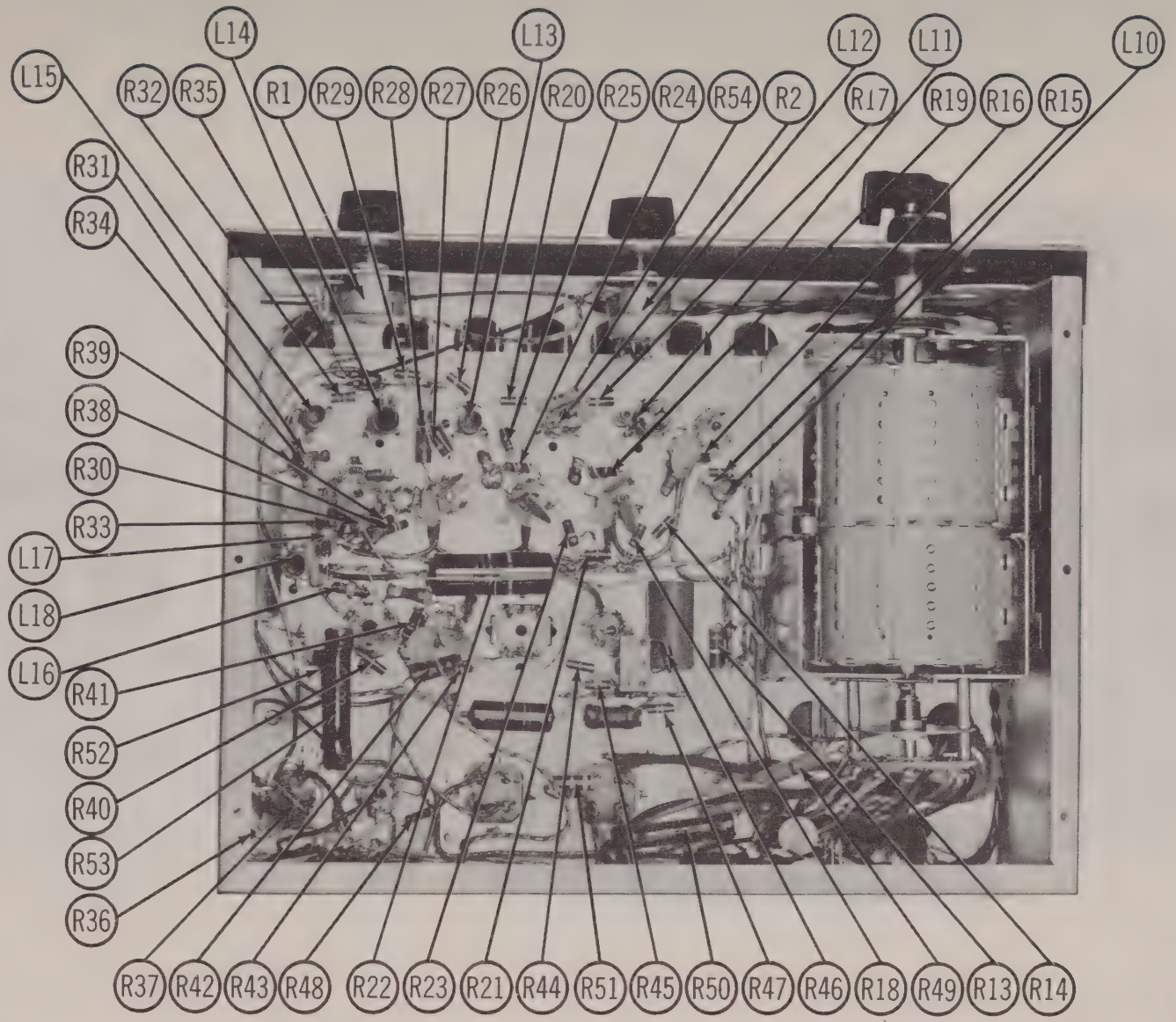
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7A	INF	650KΩ	0Ω	.1Ω	0Ω	†1.2KΩ	†106KΩ	INF	0Ω
V 2	6J6	†22KΩ	†22KΩ	.1Ω	0Ω	230KΩ	10KΩ	0Ω		
V 3	6CB6	940KΩ	51Ω	.1Ω	0Ω	†3.5KΩ	†3.5KΩ	0Ω		
V 4	6AU6	940KΩ	0Ω	.1Ω	0Ω	†3.4KΩ	†3.4KΩ	68Ω		
V 5	6AU6	950KΩ	0Ω	.1Ω	0Ω	†8KΩ	†3.2KΩ	68Ω		
V 6	6AU6	.6Ω	0Ω	.1Ω	0Ω	†8.7KΩ	†3.1KΩ	150Ω		
V 7	12AU7	†4KΩ	100KΩ	150Ω	.1Ω	.1Ω	470KΩ	2.6KΩ	.6Ω	0Ω
V 8	12AT7	†950Ω	2.5KΩ	45Ω	0Ω	0Ω	†950Ω	2.6KΩ	45Ω	.1Ω
V 9	6AU6	470KΩ	0Ω	0Ω	.1Ω	†18KΩ	†18KΩ	0Ω		
V 10	6AL5	INF	INF	.1Ω	0Ω	0Ω	0Ω	20KΩ		
V 11	6AB4	†4KΩ	INF	.1Ω	0Ω	INF	25Ω	22KΩ		
V 12	6X4	126Ω	INF	.1Ω	0Ω	INF	132Ω	40KΩ		
V 13	6AB4	‡15KΩ	INF	0Ω	.1Ω	INF	0Ω	100Ω		
V 14	6SN7GT	‡480KΩ	‡480KΩ	‡12.1KΩ	2.2Meg	‡6.1KΩ	6.6KΩ	.1Ω	0Ω	
V 15	6AC7	0Ω	0Ω	0Ω	500KΩ	120Ω	‡9KΩ	.1Ω	‡6.1KΩ	
V 16	6AV6	10Meg	0Ω	.1Ω	0Ω	0Ω	0Ω	220KΩ		
V 17	6V6GT	0Ω	0Ω	‡5KΩ	‡3KΩ	470KΩ	INF	.1Ω	270Ω	
V 18	6BE6	0Ω	0Ω	.1Ω	0Ω	‡80KΩ	‡48KΩ	2.7Meg		
V 19	6SN7GT	60KΩ	▲330KΩ	1.8KΩ	350KΩ	▲1.9Meg	1.8KΩ	.1Ω	0Ω	
V 20	6S4	INF	2.2KΩ	1 Meg	0Ω	.1Ω	1 Meg	2.2KΩ	INF	▲3.8KΩ
V 21	6AL5	INF	INF	.1Ω	0Ω	47KΩ	0Ω	47KΩ		
V 22	6SN7GT	INF	‡14.7KΩ	1.5KΩ	200KΩ	‡190KΩ	1.5KΩ	.1Ω	0Ω	
V 23	6CD6G	INF	0Ω	300Ω	INF	470KΩ	INF	.1Ω	‡18KΩ	Top Cap ▲18Ω
V 24	6W4GT	INF	INF	700KΩ	INF	‡84Ω	INF	▲26Ω	▲26Ω	
V 25	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								Top Cap ▲468Ω
V 26	5U4G	INF	18KΩ	INF	22.6Ω	INF	24Ω	INF	18KΩ	
V 27	21AP4	0Ω	160KΩ	Pin 10 ▲180KΩ	Pin 11 ‡500KΩ	Pin 12 .1Ω				

† MEASURED FROM PIN 7 OF V12.
‡ MEASURED FROM PIN 8 OF V26
▲ MEASURED FROM PIN 3 OF V24.

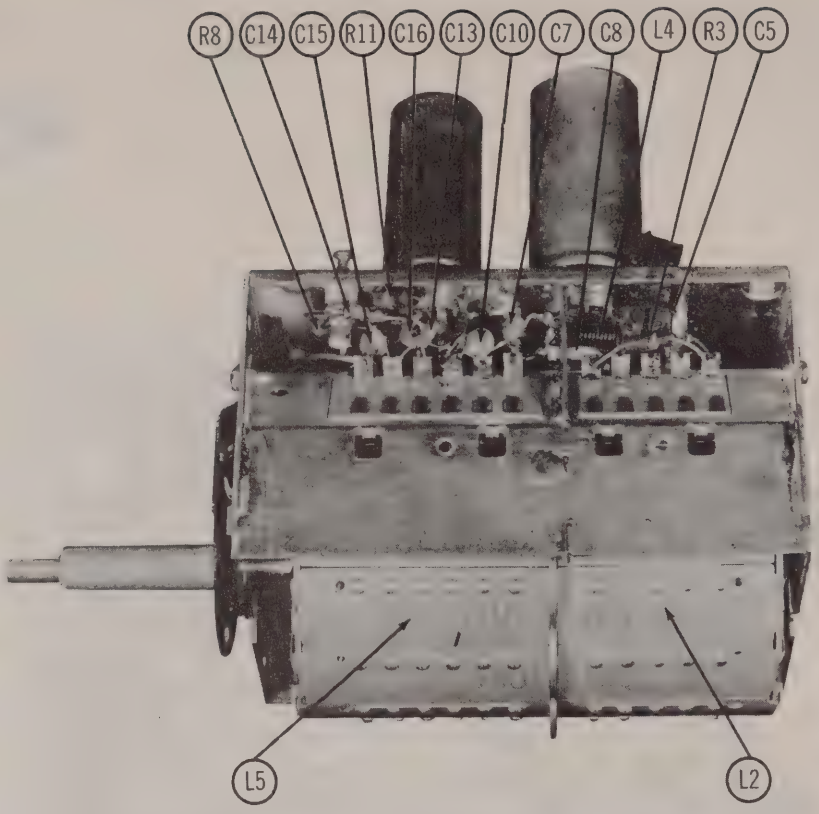


TUBE PLACEMENT CHART

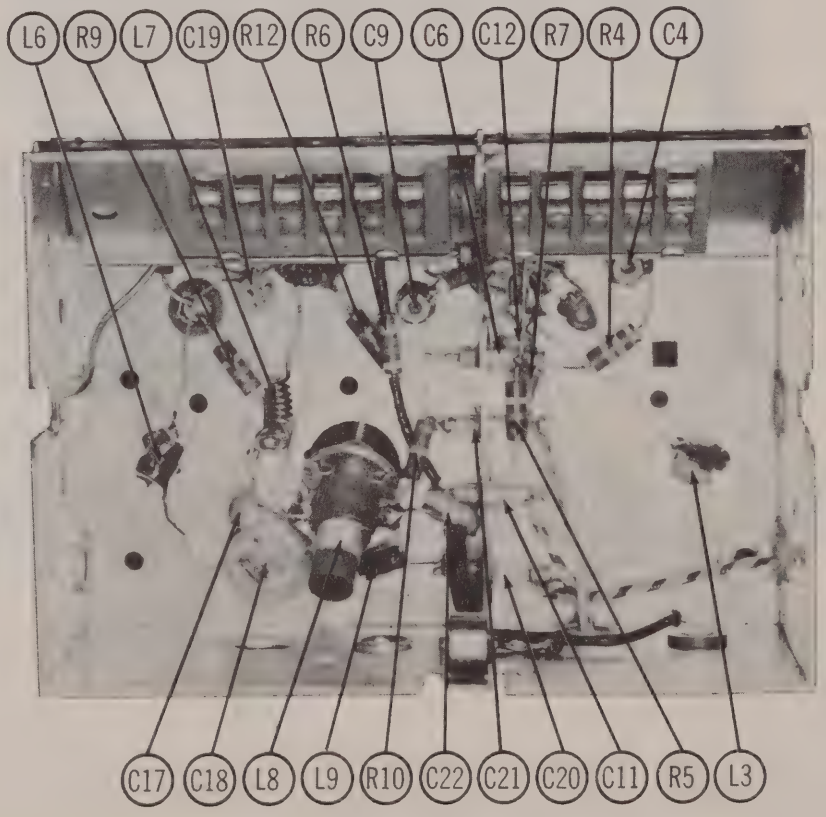


RF-IF CHASSIS-BOTTOM VIEW-RESISTOR & INDUCTOR IDENTIFICATION

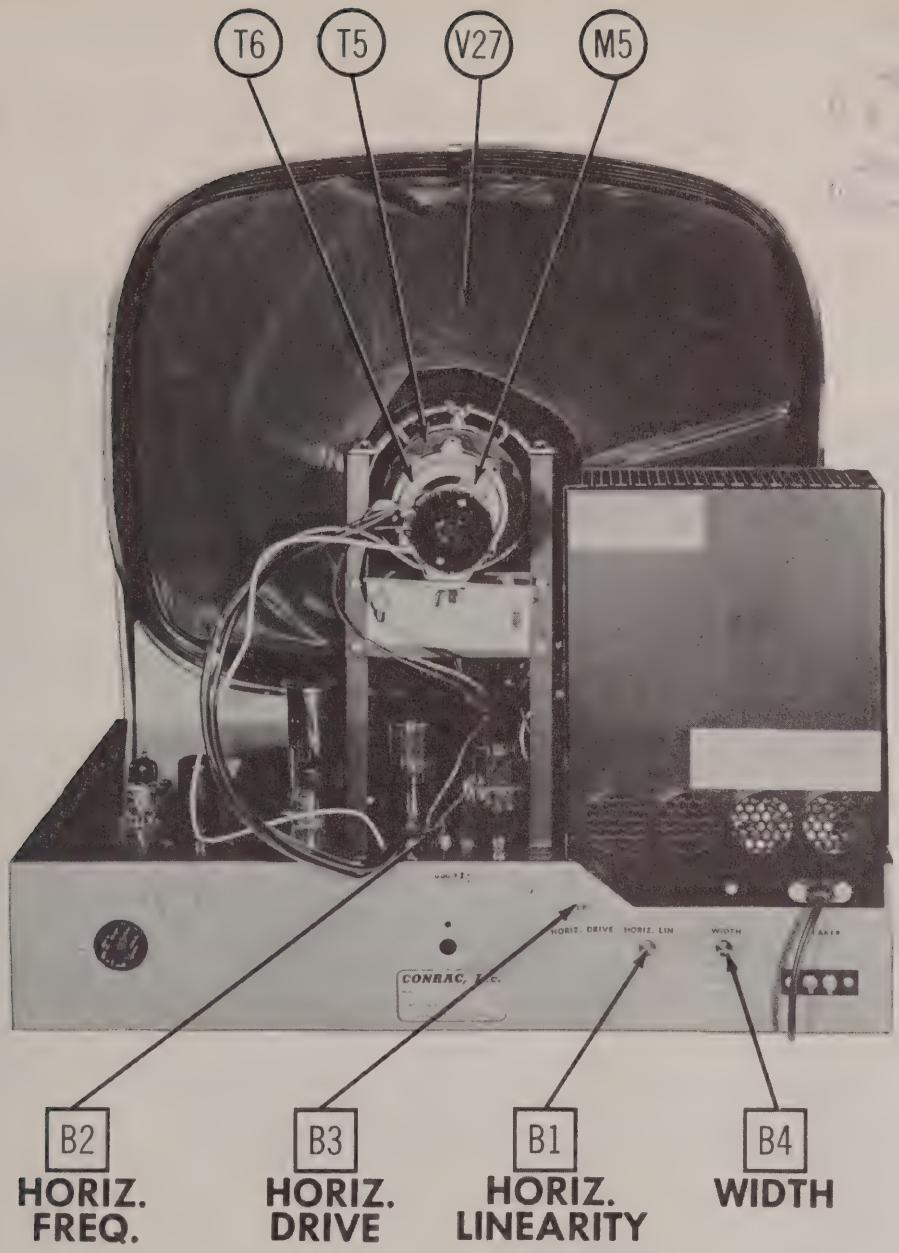
L. F. BRAUN CO.
3924 WEDGE ST.
DENVER, COLO.



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



SWEEP CHASSIS-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Connect a VTVM across the cathode resistor, R115 of the 6CD6, V23.

Adjust the horizontal linearity slug (B1) for a picture that is symmetrical from left to right.

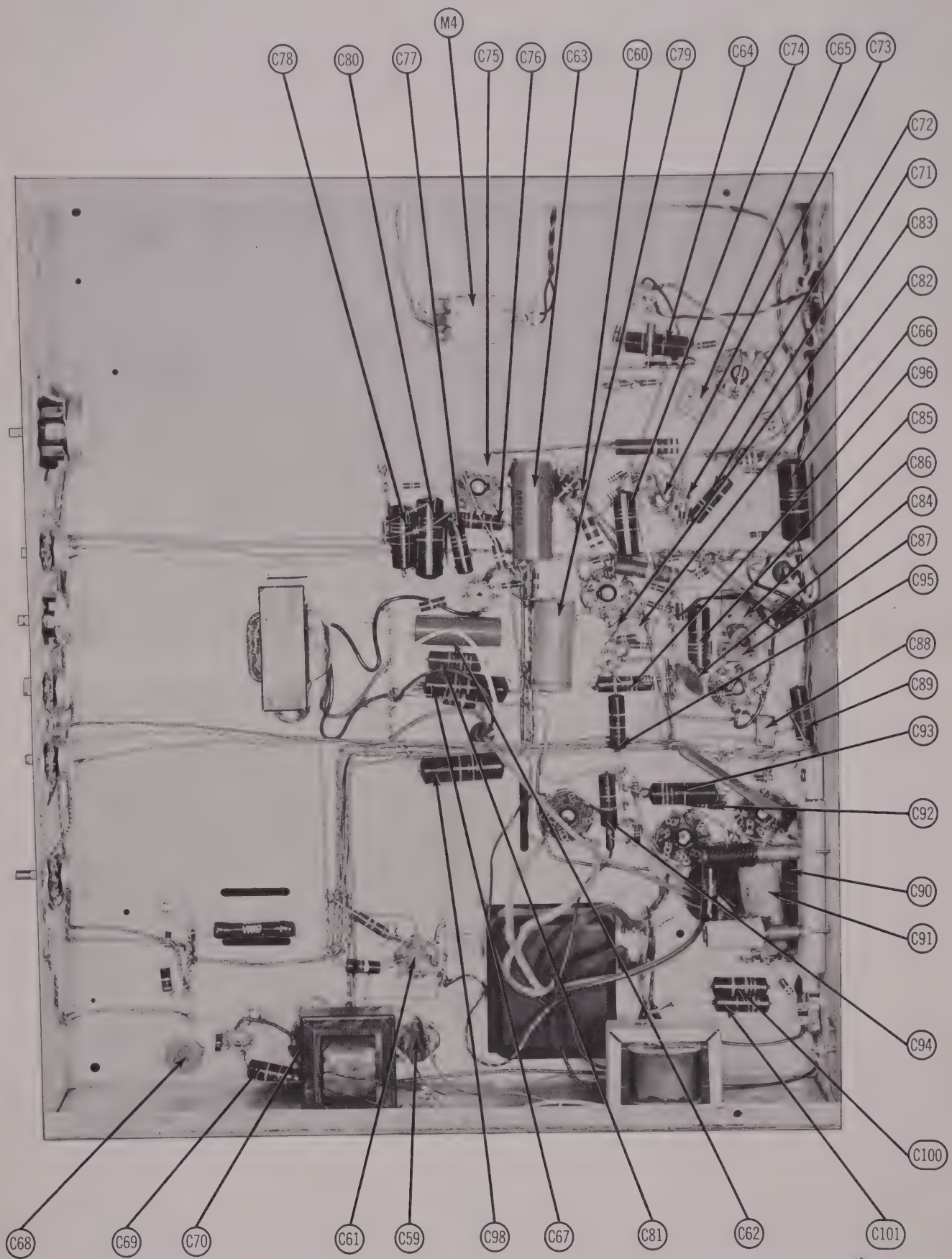
This point of adjustment will also be very near the point of minimum cathode voltage.

Short the grid, pin 1, of V22 to chassis.

Set the horizontal hold at the middle of its range and adjust the horizontal frequency slug (B2) for the nearest approach to sync as possible. Remove the short from pin 1 of V22.

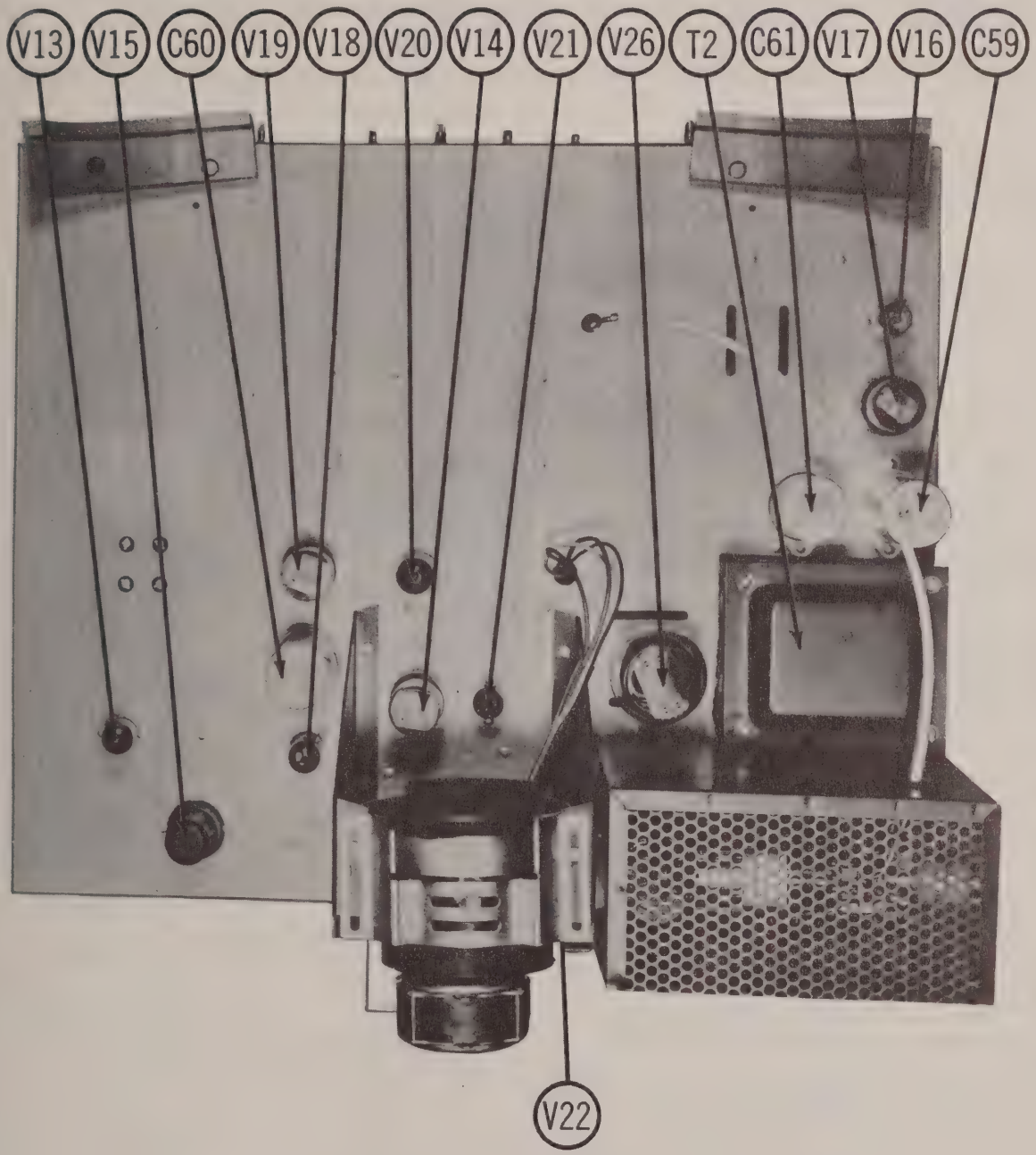
Set contrast at minimum and brightness to normal. Adjust the horizontal drive trimmer (B3) clockwise as far as possible (from rear of chassis) without the presence of white vertical bars in the picture.

Adjust the width slug (B4) for a picture slightly larger than necessary to fill the picture mask horizontally.



SWEEP CHASSIS-BOTTOM VIEW - CAPACITOR IDENTIFICATION

PROPERTY OF
L. F. PLANTENSHIP



SWEEP CHASSIS - TOP VIEW

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

See LOSS OF HIGH VOLTAGE

INSUFFICIENT SWEEP

Check by substitution V22, V23, V24 and V26. Check waveform W15.

If Unsatisfactory	If Satisfactory
Check all components of the horiz. oscillator. Check coupling between V22 and V23.	Check components of V23 and V24. Check particularly C90 for open. Check width control.

DRIVE LINES

Substitute V23 and V24. Check setting of drive control. Check R113 for change in value.

COMPRESSED AT LEFT SIDE

Substitute V23 and V24. Check T3, T5A, T7 and associated components.

FOLDS

Substitute V23 and V24. Check T3 and T5A.

XMAS TREE EFFECT

Substitute V22. Check L24 and C86.

VERTICAL

LOSS OF SWEEP

Substitute V19 and V20. Check waveform W9.

If Unsatisfactory	If Satisfactory
Check all components of V19. Check coupling and waveshaping network between V19 and V20.	Check components of V20. Check T4 and T5B.

INSUFFICIENT SWEEP

Substitute V19 and V20. Follow procedure outlined under LOSS OF SWEEP.

COMPRESSED AT BOTTOM

Check C80 for leaky condition. Check C62 for open.

PICTURE FOLDED AND PARTLY INVERTED

Check C78 and R95 for open.

FOLDS

Substitute V20 and check T4 and T5B.

SYNC

HORIZONTAL

LOSS OF SYNC

Check by substitution V14, V18, V21 and V22. Check waveform W6.

If Unsatisfactory	If Satisfactory
Check all components of V18. Check components of coupling network between V15 and V18.	Check components of V14B, V21 and V22.

CRITICAL SYNC

Substitute V18, V14, V21 and V22. Follow procedure outlined under LOSS OF SYNC

PIE CRUST EFFECT

Check C85 for open.

VERTICAL

LOSS OF SYNC

Check by substitution V14, V18 and V19. Check waveform W7.

If Unsatisfactory	If Satisfactory
Check waveform W6.	Check components of V19. Check coupling and waveshaping network between V19 and V20.

Check waveform W6.

If Unsatisfactory	If Satisfactory
Check all components of V18. Check coupling network between V15 and V18. Check C74 for open.	Check components of V14. Check integrating network

CRITICAL SYNC

Substitute V14, V18 and V19. Follow procedure outlined under LOSS OF SYNC.

TRIGGERING

Dress all filament leads away from grid leads of the vertical multi-vibrator.

VIDEO

SOUND BARS

Check adjustment of A29. Check setting of local oscillator and video IF alignment.

POOR RESOLUTION

Check alignment of tuner and IF stages. Substitute V13 and V15. Check associated components.

SMEAR

Substitute V15 and check associated components.

WIDE BLACK BAR ACROSS THE PICTURE

Check tuner, video IF, video detector and video amplifier tubes for filament to cathode leakage.

POOR CONTRAST

Substitute V13 and V15. Check video alignment. Check all components of video amplifier and output stage. Check picture tube.

AUDIO

WEAK OR NO SOUND

Check by substitution V8, V9, V10, V11, V16 and V17. Check alignment of sound and video IF.

BUZZ

Adjust secondary of ratio detector for minimum buzz. Substitute V10 and readjust. Check local oscillator setting. Check for overload at waveform W1. If overloading exists, check AGC network.

DISTORTED

Check audio stages using audio signal generator and scope.

If Undistorted	If distorted
Check alignment of ratio detector and sound IF stages.	Substitute tube and check components of stage where distortion occurs.

PARTS LIST AND DESCRIPTIONS
RF-IF CHASSIS
TUBES (SYLVANIA or Equivalent)

PROPERTY OF L. F. BLANKENSHIP

ITEM No.	USE	REPLACEMENT DATA: FLEETWOOD PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1A	RF Amplifier	6BQ7A	6BQ7A	9AJ	
B	RF Amplifier	6BQ7	6BQ7	9AJ	
C	RF Amplifier	6BK7	6BK7	9AJ	
V2	Converter	6J6	6J6	7BK	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6AU6	6AU6	7BK	
V5	3rd. Video IF Amp.	6AU6	6AU6	7BK	
V6	4th. Video IF Amp.	6AU6	6AU6	7BK	
V7	Video Detector-AGC Rectifier-1st. Sound IF Amp.	12AU7	12AU7	9A	
V8	Video Cathode Follower	12AT7	12AT7	9A	
V9	2nd. Sound IF Amp.	6AU6	6AU6	7BK	
V10	Ratio Detector	6AL5	6AL5	6BT	
V11	Audio Cathode Follower	6AB4	6AB4	5CE	
V12	Rectifier	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: FLEETWOOD PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	20	450								
B	▲20	450		AFH4-14		DO13		FP444	TVL-4763	
C	▲20	450								
D	■20	450								
C2A	▲20	450								
B	20	450		AFH4-14		DO13		FP444	TVL-4763	
C	▲20	450								
D	■20	450								
C3	5	50		PRS150/4		BR550		TC30	TVA-1303	
C4	3-9				829-10					
C5	3			SI3NP0			NP0K-030	ZT-553		
C6	1000			CN-1-001	MFT-1000				503C-D1	
C7	1.5			SI1.5NP0	TCZ-1.5		NP0K-1R5	ZT-5515	5TCCB-V15	
C8	1000			CN-1-001	MFT-1000				503C-D1	
C9	.5-3				829-3			CT565A		
C10	51			SI51	D6-500	TM5Q5	GP1K-510	UC-545	5GA-Q5	
C11	1000			CN-1-001	MFT-1000				503C-D1	
C12	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C13	51			SI51	D6-500	TM5Q5	GP1K-510	UC-545	5GA-Q5	
C14	.5-3				829-3			CT565A		
C15	5			SI5N750	TCN-5		N750K-050	NT-555	5TCUB-V5	
C16	10			SI10NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C17	6.8			SI6.8NP0	TCZ-6.8		NP0K-6R8	ZT-5568	5TCCB-V68	
C18	73						NP0-333-730			
C19	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C20	1000			CN-1-001	MFT-1000				503C-D1	
C21	1000			CN-1-001	MFT-1000				503C-D1	
C22	300			SI300	D6-301		GP2K-301	UC-533	5GA-T3	
C23	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C24	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C25	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C26	75			SI75NP0	TCZ-75		NP0-333-750	ZT-5475	5TCC-Q75	
C27	330			SI330	D6-331		GP2K-331	UC-5333	5GA-T33	
C28	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C29	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C30	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C31	68			SI68NP0	TCZ-68		NP0-333-680		5TCC-Q68	
C32	330			SI330	D6-331		GP2K-331	UC-5333	5GA-T33	
C33	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C34	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C35	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C36	330			SI330	D6-331		GP2K-331	UC-5333	5GA-T33	
C37	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C38	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C39	100	500		1469-0001		5R5T1		MCB235	MS-31	
C40	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C41	330			SI330	D6-331		GP2K-331	UC-5333	5GA-T33	
C42	5.6									
C43	56									
C44	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C45	.22	400		P488-22		PTE4P22		PT4025	4TM-P22	
C46	.5	200		P288-5		PJ2P5		PT405	2TM-P5	
C47	56						NP0-333-560			
C48	5000			BPD-005		TM5D5		DC-525	5HK-D5	
C49	56				TCZ-56					
C50	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C51	1000			SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C52	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C53	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C54	500	500		1469-0005		5R5T5		MCB245	MS-35	
C55	4000			SI4000	D6-402	TM5D4	GP2-333-402	UC-5240	5HK-D4	
C56	.022	600		P688-022	DD-203	PTE6S22		PT6122	6TM-S22	
C57	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C58	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: FLEETWOOD PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	5000Ω	½	600-R142	Q11-114	AG-19-S	B-10	U-14	Contrast
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
R2A	500KΩ	½	274-R30	Q13-133	AG-60-Z	B-60-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R2A

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA FLEETWOOD PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R3	15KΩ	½			
R4	47KΩ	½			
R5	220KΩ	½			
R6	470Ω	½		BTS-470	
R7	180KΩ	½		BTS-180K	
R8	10KΩ	½			
R9	220KΩ	½			
R10	15KΩ	½			
R11	10KΩ	½			
R12	15KΩ	½		BTS-15K	
R13	6800Ω	1		BTA-6800	
R14	1000Ω	½		BTS-1000	
R15	3300Ω	½		BTS-3300	
R16	5Ω 5%	½		BTS-5I 5%	
R17	150Ω	½		BTS-150	
R18	10KΩ 5%	½			
R19	68Ω	½		BTS-68	
R20	150Ω	½		BTS-150	
R21	1000Ω	½		BTS-1000	
R22	1000Ω	½		BTS-1000	
R23	10KΩ 5%	½			
R24	68Ω	½		BTS-68	
R25	4700Ω 5%	½		BTS-4700 5%	
R26	150Ω	½		BTS-150	
R27	150Ω	½		BTS-150	
R28	5600Ω 5%	1		BTA-5600 5%	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA FLEETWOOD PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R29	150Ω	½		BTS-150	
R30	470KΩ	½		BTS-470K	
R31	470KΩ	½		BTS-470K	
R32	22Meg	½		BTS-22Meg	Note 1
R33	4700Ω 5%	½		BTS-4700 5%	
R34	180KΩ	½		BTS-180K	Note 1
R35	1000Ω	½		BTS-1000	
R36	150Ω	½		BTS-150	
R37	150Ω	½		BTS-150	Note 1
R38	100KΩ	½		BTS-100K	
R39	150Ω	½		BTS-150	
R40	1000Ω	½		BTS-1000	
R41	470KΩ	½		BTS-470K	
R42	15KΩ	1		BTA-15K	
R43	22KΩ	½		BTS-22K	
R44	5Ω 5%	½		BTS-5I 5%	Note 2
R45	22KΩ	½		BTS-22K	
R46	10KΩ	½		BTS-10K	
R47	10KΩ	½		BTS-10K	
R48	22KΩ	½		BTS-22K	
R49	1.8Ω	2			Note 3
R50	150	10			
R51	3900Ω	1		BTA-3900	
R52	800Ω	10		1 3/4A-800	
R53	2000Ω	10		1 3/4A-2000	
R54	3900Ω	½		BTS-3900	

Note 1. Not used in all Models.
Note 2. Some Models may use a 270Ω resistor in this application.
Note 3. Some Models may use a 1.5Ω resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA FLEETWOOD PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.
T1	117VAC ④.57A	534VCT .088ADC	6.3VAC ⑤4.6A			PC-8420②				

② Drill new mounting holes.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA FLEETWOOD PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L2	Ant. Coils	0Ω CT	0Ω					
L3	Fil. Choke	0Ω						
L4	Neutr. Coil	0Ω						
L5	RF, Mixer Grid & Osc. Coils	0Ω						
L6	Fil. Choke	0Ω						
L7	RF Choke	0Ω						
L8	Conv. Plate	.8Ω						
L9	RF Choke	.6Ω						
L10	1st. Video IF	.6Ω			17-1004	TV-103 *	6189 *	Includes trap
L11	2nd. Video IF	.1Ω						Includes trap
L12	3rd. Video IF	.4Ω						
L13	4th. Video IF	.8Ω			17-1004	TV-103 *	6189 *	
L14	Sound Trap	0Ω	0Ω		20-1021	TV-150	6193	
L15	5th. Video IF	.6Ω			19-1020	TV-112 *	6171 *	
L16	Shunt Peaking Coil	3.8Ω			19-3036	TV-180	6176	35 Microhenries
L17	Series Peaking Coil	5.2Ω			19-3075	TV-181	6172	70 Microhenries
L18	4.5MC Trap	1.6Ω			20-1004	TV-151	1470	
L19	Sound IF	.8Ω	1.8Ω		17-1021	TV-113 ▲	1466 †	
L20	Ratio Det.	5.5Ω	2Ω CT		17-3497	TV-115	6205	Tertiary Winding -.6Ω

* Enlarge mounting hole.
† Drill one new mounting hole
▲ Use adaptor plate

MISCELLANEOUS

ITEM No.	PART NAME	FLEETWOOD PART No.	NOTES
M1	Pilot Light		Type #44, Channel indicator (12 used)
M2	Pilot Light		Type #44, Panel Lights (2 Used)
M3	RF Tuner		

SWEEP CHASSIS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA FLEETWOOD PART No.	REPLACEMENT DATA STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V13	Video Amplifier	6AB4	6AB4	5CE	
V14	DC Restorer - Sync Phase Inv.	6SN7GT	6SN7GT	8BD	
V15	Video Output	6AC7	6AC7	8N	
V16	AF Amplifier	6AV6	6AV6	7BT	
V17	Audio Output	6V6GT	6V6GT	7S	
V18	Sync Amplifier - Noise Inverter	6BE6	6BE6	7CH	
V19	Vert. Mult.	6SN7GT	6SN7GT	8BD	
V20	Vert. Output	6S4	6S4	9AC	
V21	Horiz. AFC	6AL5	6AL5	6BT	
V22	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V23	Horiz. Output	6CD6G	6CD6G	5BT	
V24	Damper	6W4GT	6W4GT	4CG	
V25	HV Rectifier	1B3GT	1B3GT	3C	
V26	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA FLEETWOOD PART No.	REPLACEMENT DATA SYLVANIA PART No.		RTMA BASE TYPE	NOTES
V27	21AP4	21AP4		12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA FLEETWOOD PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C59A	▲40	475		AFH2-72		BG53		FP262	TVL-2830	
B	▲40	475								
C60A	20	450		AFH4-14		DG13		FP444	TVL-4763	
B	▲20	450								
C	■20	450								
D	▲20	450								
C61A	▲20	450		AFH4-69		DG52		FP444	TVL-4763	
B	▲20	450								
C	20	25								
D	■20	450								
C62	50	50		PRS50/50		BR505		TC39	TVA-1308	
C63	20	450		PRS450/20		BR2045A		TC75	TVA-1709	
C64	.047	600		P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C65	1500	500		1467-0015	D6-152	1W5D15	GP2L-152	MC256	1FM-215	
C66	.22	400		P488-22		PTE4P22		PT4025	4TM-P22	
C67	.1	600		P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C68	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C69	.022	600		P688-022	DD-203	PTE6S22		PT6122	6TM-S22	
C70	4000			SI4000	D6-402	TM5D4	GP2-333-402	UC-5240	5HK-D4	
C71	.0068	600		P688-0068	D6-682	PTE6D68	GP2-333-682	TP445	6TM-D68	
C72	220	500		1468-00025	D6-221	5W5T25	GP2K-221	MC240	1FM-325	
C73	10000			BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C74	.047	600		P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C75A	.01			P688-01		PTE6S1	GP2-333-103	PT611	6TM-S1	
B	.002		♦	P688-002	♦PC-101	PTE6D2	GP2-333-202	PT622	6TM-D2	
C	.005			P688-005		PTE6D5	GP2-333-502	PT625	6TM-D5	
D	.005			P688-005		PTE6D5	GP2-333-502	PT625	6TM-D5	
C76	.015	600		P688-015		PTE6S15		TP411	6TM-S15	
C77	.0068	600		P688-0068	D6-682	PTE6D68	GP2-333-682	TP445	6TM-D68	
C78	.047	600		P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C79	.25	600		684-25		PTE6P25		PT6025	6TM-P25	
C80	.1	600		P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C81	.022	600		P688-022	DD-203	PTE6S22		PT6122	6TM-S22	
C82	500	500		1469-0005		5R5T5		MCB245	MS-35	
C83	500	500		1469-0005		5R5T5		MCB245	MS-35	
C84	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	6TM-S47	
C85	.047	600		P688-047	DF-503	PTE6S47		PT6147		
C86	6800	500								
C87	270	500		1468-0003	D6-271	5W5T3	GP2K-271	MC241		
C88	47	500		1468-00005	D6-470	5W5Q5	GP1K-470	MC225	1FM-45	
C89	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C90	.1	600		P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C91	.5	400		484-5		PJ4P5		PT405	4TM-P5	
C92	.047	600		P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C93	.047	600		P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C94	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C95	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C96	.0068	600		P688-0068	D6-682	PTE6D68	GP2-333-682	TP445	6TM-D68	
C97	500	20000		HV20C	TV3-502	MM-C20T5	413-501		20DK-T5	
C98	.1	600		P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C99	47	1000				TM10Q47		MC1447	10GA-Q47	
C100	.022	600		689ZX-02		PJ6S22		PT6122	6TM-S22	
C101	.022	600		689ZX-02		PJ6S25		PT6122	6TM-S22	

♦ Items C75A, C75B, C75C, C75D, R90A, R90B, R90C, R90D are combined in one unit.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA FLEETWOOD PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R55A	500KΩ	½		460-R18	QII-133	AG-58-S	B-59	Brightness
B	Shaft			Not Req.	Not Req.	FS-3	Not Req.	Attach to R55A
R56A	100KΩ	½		460-R54	QII-128	AG-49-S	AB-40	Horiz. Hold
B	Shaft			Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R56A
R57A	2Meg	½		460-R510	QII-139	AG-83-S	AB-75	Height
B	Shaft			Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R57A
R58A	3000Ω	2		460-R71	WK-3000	A43-3000	VK-133	Vert. Linearity-wire wound
B	Shaft			Not Req.	Not Req.	FKS-1/4	Not Req.	Attach to R58A
R59A	250KΩ	½		460-R69	QII-130	AG-55-S	AB-50	Vert. Hold
B	Shaft			Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R59A
R60A	3000Ω	4		460-R305	4WK-3000	A10-3000	SVP-988	Focus-wire wound
B	Shaft			Not Req.	Not Req.	FKS-1/4	Not Req.	Attach to R60A

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA FLEETWOOD PART No.	IRC PART No.	NOTES
R61	100Ω	1		BTA-100	
R62	5Ω 5%	½			
R63	3000Ω 5%	½		BTS-3000 5%	
R64	10KΩ	1		BTA-10K	
R65	470KΩ	½		BTS-470K	
R66	500KΩ 5%	½			
R67	120Ω	½		BTS-120	
R68	220Ω	½		BTS-220	
R69	4700Ω	2		BTB-4700	
R70	22KΩ	½		BTS-22K	
R71	22KΩ	½		BTS-22K	
R72	470KΩ	½		BTS-470K	
R73	100KΩ	½		BTS-100K	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA FLEETWOOD PART No.	IRC PART No.	NOTES
R74	330KΩ	½		BTS-330K	
R75	10Meg	½		BTS-10Meg	
R76	220KΩ	½		BTS-220K	
R77	470KΩ	½		BTS-470K	
R78	270Ω	3		BTS-270	
R79	1000Ω	2		BTB-1000	
R80	2.2Meg	½		BTS-2.2Meg	
R81	470KΩ	½		BTS-470K	
R82	1Meg	½		BTS-1Meg	Note 1
R83	39KΩ	½		BTS-39K	
R84	390KΩ	½		BTS-390K	
R85	100KΩ	½		BTS-100K	
R86	2.2Meg	½		BTS-2.2Meg	
R87	3900Ω	½		BTS-3900	

RESISTORS (CONT.)

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA FLEETWOOD PART No.	IRC PART No.	NOTES
R88	2700Ω	½		BTS-2700	
R89	4700Ω	½		BTS-4700	
R90A	22KΩ	½	♦	BTS-22K	
B	22KΩ	½		BTS-22K	
C	8200Ω	½		BTS-8200	
D	8200Ω	½		BTS-8200	
R91	250KΩ	1			
R92	1800Ω	½		BTS-1800	
R93	220KΩ	½		BTS-220K	
R94	1.2Meg	½		BTS-1.2Meg	
R95	15KΩ	½		BTS-15K	
R96	1Meg	½		BTS-1Meg	
R97	2200Ω	1		BTA-2200	Note 2
R98	82KΩ	½		BTS-82K	
R99	560Ω	½		BTS-560	
R100	560Ω	½		BTS-560	
R101	1000Ω	½		BTS-1000	
R102	100KΩ	½		BTS-100K	
R103	100KΩ	½		BTS-100K	
R104	470KΩ	½		BTS-470K	
R105	47KΩ	½		BTS-47K	
R106	1500Ω 5%	½		BTS-1500 5%	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA FLEETWOOD PART No.	IRC PART No.	NOTES
R107	4700Ω 5%	½		BTS-4700 5%	
R108	180KΩ	½		BTS-180K	
R109	180KΩ	½		BTS-180K	
R110	10KΩ	½		BTA-10K	
R111	47KΩ	½		BTS-47K	
R112	22KΩ	½		BTS-22K	Note 3
R113	4700Ω 5%	½		BTS-4700 5%	
R114	150Ω	½			
R115	470KΩ	½		BTS-470K	
R116	300Ω	10		1 3/4A-300	
R117	18KΩ	10		1 3/4A-18K	
R118	2200Ω	2		BTB-2200	
R119	3.9Ω	½			
R120	82KΩ	½			
R121	82KΩ	½			
R122	82000Ω	2		BTB-8200	Note 4
R123	3900Ω	2		BTB-3900	
R124	7500Ω	10		1 3/4A-7500	
R125	470Ω	1		BTA-470	
R126	10Ω	½		1 3/4A-10	
R127	100KΩ	½		BTS-100K	

Note 1. Not used in all Models.
Note 2. Some Models may use a 2000Ω resistor in this application.
Note 3. Some Models may use a 15KΩ resistor in this application.
Note 4. Some Models may use 6800Ω resistor in this application.
♦ Items R90A, R90B, R90C, R90D, C75A, C75B, C75C, C75D are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA FLEETWOOD PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.
T2	117VAC ④1.72	700VCT .200ADC	5VAC ④ 3A	6.3VAC ⑤1.2A SEC. 4 6.3VAC ④ 7.1A		P-8165 ①	P-3070	TP-360 ②	R-37BC	201T10 ②

① Tape extra high voltage winding.
② Drill new mounting holes.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA FLEETWOOD PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.	NOTES
T3	504Ω tap ⑥5Ω, 7.7Ω 10Ω, 34Ω, 36Ω, 54Ω,	0Ω			HVO-9	TFB-13①	D-19 ②	230T1 ⑩	Horiz. Output Trans.
T4	1675Ω tap ⑥6Ω			A-8141	A-3039	T3O-12	A-104X	226T1	Vert. Output Trans.
T5A	35Ω			DY-11A ③		TY-7 ④	Y-19 ④		Horiz. Deflection Coils Vert. Deflection Coils
B	45Ω								EW-PM Focus Coil
T6	1460Ω					WC-12⑤	21IR1 ⑨		Horiz. Linearity Coils
T7	8Ω					WC-11 ⑧	21ZR1		Width Coil
T8	12Ω			WC-5 ⑧	MWC-1⑧ ⑦	TWL-1			

① Wire as in original circuit except; jumper terminal #7 to #8, connect original terminal #7 and #8 to jumpered terminal #7 or #8, connect original terminal #4 and "T" to new terminal #4.
② Connect terminal #7 to #8 and wire as in original circuit.
③ Use original horiz. deflection coil network if necessary.
④ Use original deflection coil.
⑤ Connect to coded blue and red terminals.
⑥ Do not use secondary.
⑦ Enlarge mounting hole.
⑧ Connect to blue and red terminals.
⑨ Width coil used as linearity coil.
⑩ Wire as in original circuit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA FLEETWOOD PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T9	7KΩ	3Ω-4Ω	566Ω	.56Ω		A-3849	A-3020	RO-302 ①	S-9X ①	

① Drill one new mounting hole.

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ^)	REPLACEMENT DATA FLEETWOOD PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L1	.200ADC	76Ω	3.5 Hy.		C-2325 ①	C-2974	TR-4300 ①	

① Drill one new mounting hole.

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	FLEETWOOD PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L21	Shunt Peaking Coil	6Ω.			19-3093	TV-181	6177	93 Microhenries
L22	Series ing Coil	12Ω			19-4200		4646■	215 Microhenries, wound on 18KΩ resistor
L23	Shunt Peaking Coil	18Ω			19-1923	TV-188	4566	450 Microhenries
L24	Horiz. Osc.				19-1575	TV-163	6210	

■ Parallel with 18KΩ resistor

MISCELLANEOUS

ITEM No.	PART NAME	FLEETWOOD PART No.	NOTES
M4	Relay		Off/On (Picture Chassis)
M5	Ion Trap		
B3	Trimmer		Horiz. Drive

TROUBLE SHOOTING AIDS (CONT.)

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution V22, V23, V24 and V25. Check waveform W15.

If Unsatisfactory	If Satisfactory
Check all components of horizontal oscillator. Check coupling capacitor C89.	Check T3, T5A, T8 and the rest of components associated with V23, V24 and V25.

INSUFFICIENT HIGH VOLTAGE

If substituting V22, V23, V24 and V25 fail to correct trouble, follow procedure outlined under LOSS OF HIGH VOLTAGE.

BLOOMING

Follow procedure outlined under INSUFFICIENT SWEEP.

DENVER, COLORADO

POWER

SET DEAD

Check V12 and V26. Check B plus circuit of both chassis for shorted filters. Check voltage on relay field.

SMALL RASTER AND WEAK SOUND

Substitute V26. Check filter capacitors for leakage.

DIM PICTURE

Substitute V26. Check B plus components. Check picture tube.

GENERAL

RASTER BUT NO SOUND OR PICTURE

Substitute V2, V3, V5, V6 and V7. Check circuit components.

SNOWY PICTURE

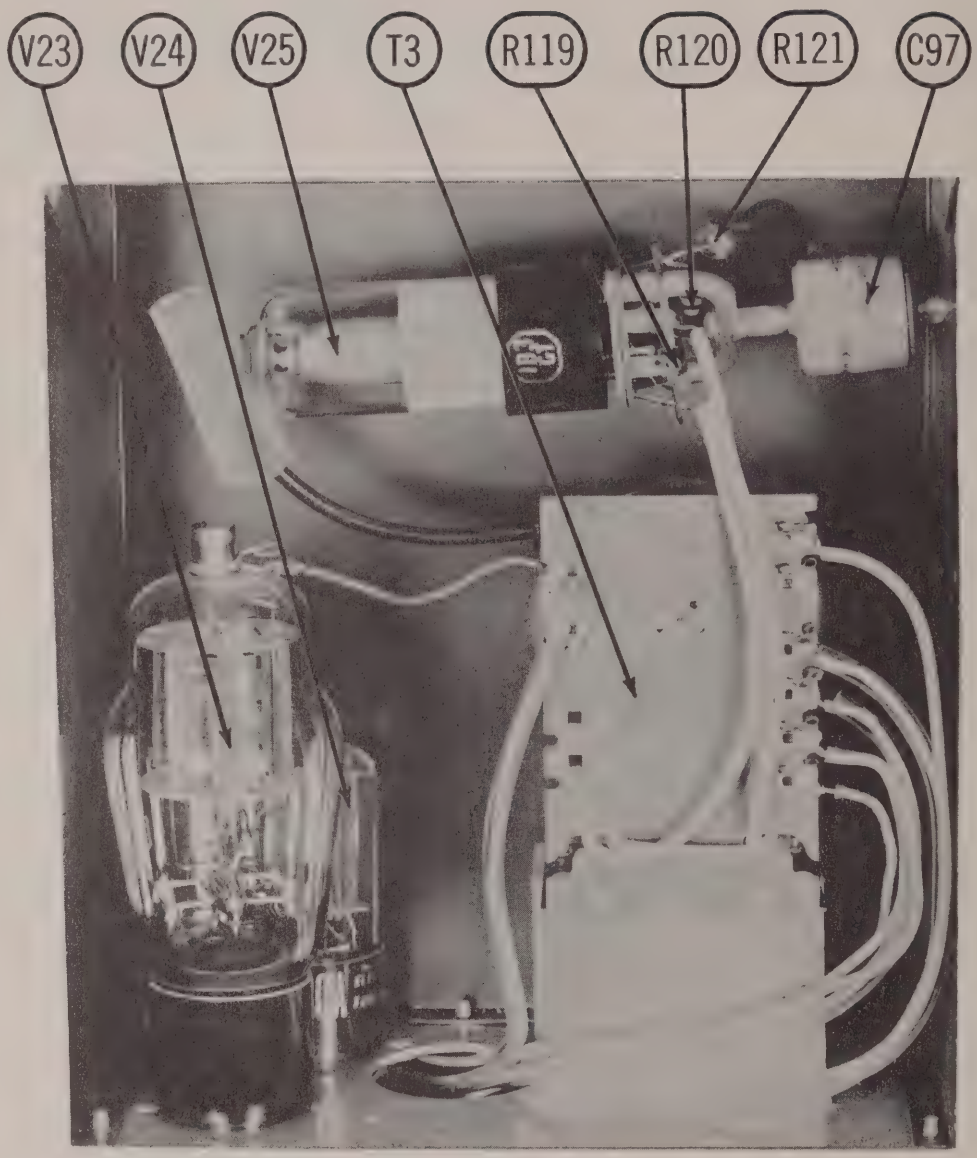
Substitute V1 and check components.

SOUND BUT NO PICTURE

Substitute V8, V13 and V15. Check associated components.

INTERMITTENT STREAKS

Check high voltage circuit for corona discharge and arcing.



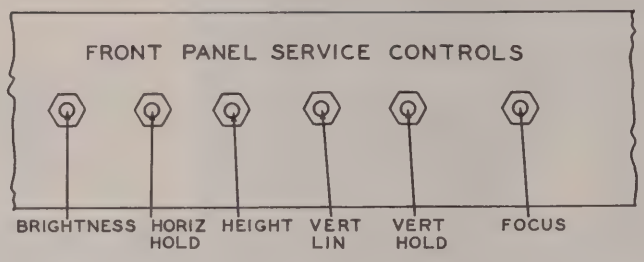
HIGH VOLTAGE COMPARTMENT

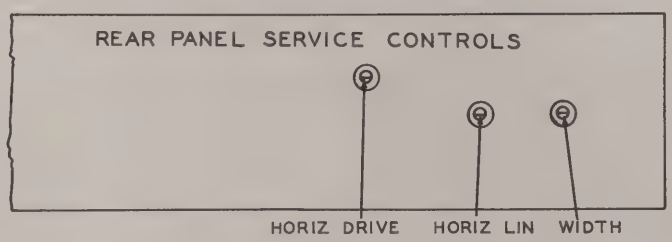
SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the RF Tuner Oscillator Circuit are made through a small hole just to the right of the channel selector and fine tuning knobs.

SERVICE ADJUSTMENT LOCATION





HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

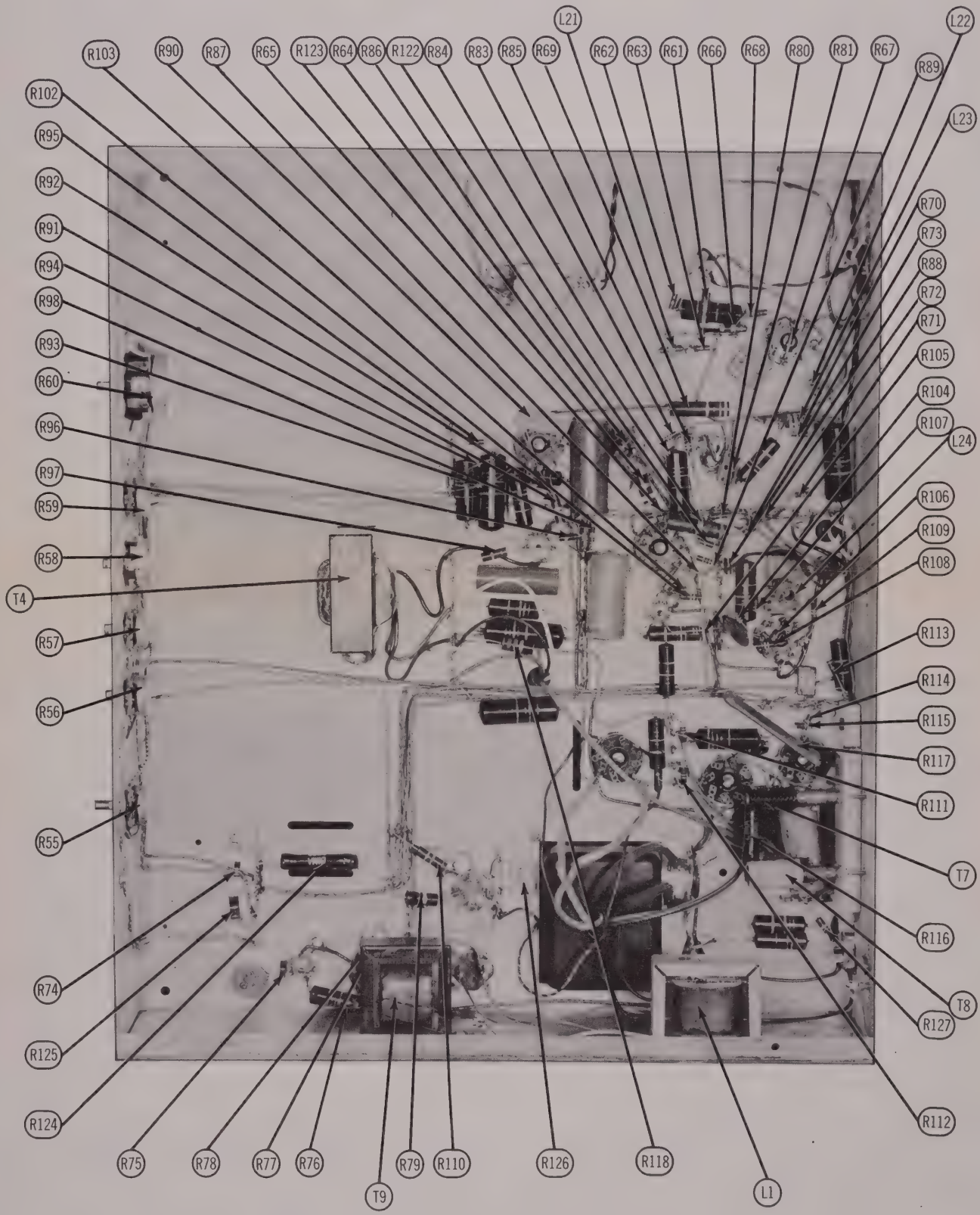
For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to set. Adjustment is located on top of chassis. Set the horizontal hold control at the center of its range and adjust the horizontal frequency slug, L24, until, picture synchronizes horizontally. (For location see tube placement chart).

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (L20) located on top of chassis. (See tube placement chart).

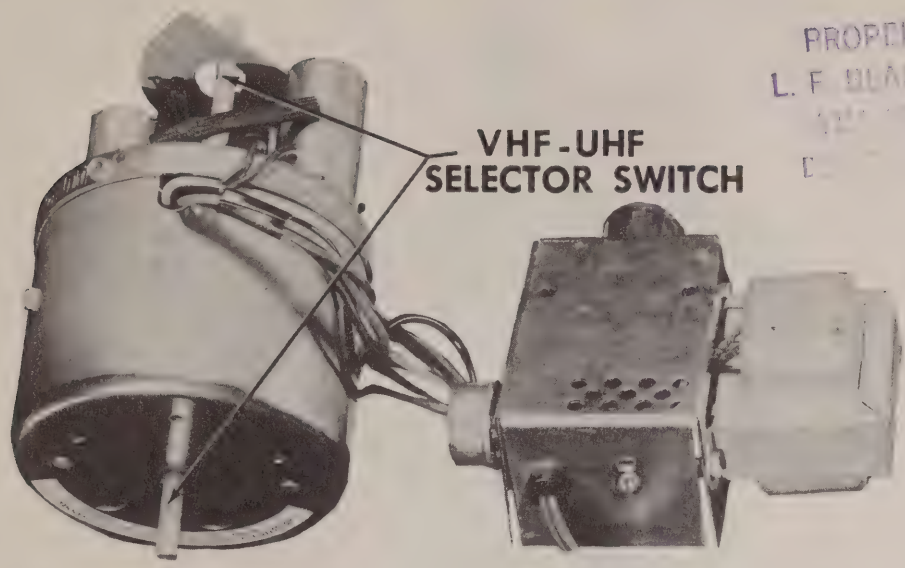
CENTERING

Centering is accomplished mechanically by adjusting the focus magnet. Loosen single wing nut under shelf holding focus magnet, and two wing nuts holding shelf to mounting bracket. Move focus magnet forward and back and up and down vertically until picture is properly centered.



SWEEP CHASSIS-BOTTOM VIEW-RESISTOR & INDUCTOR IDENTIFICATION

PROPERTY OF
L. F. BLANKENSHIP
[illegible] TRADE ST.
[illegible]



GENERAL ELECTRIC
MODEL UHF-103 (UHF Conv.)

TRADE NAME	General Electric Model UHF-103
MANUFACTURER	General Electric Co., Electronics Dept., Electronics Park, Syracuse, N.Y.
TYPE SET	AC Operated 3 Channel UHF Converter to Be Used with GE VHF Receivers Listed Below
TUBES (Two)	Types 6AF4 UHF Osc., 6BK7 IF Amp.
POWER SUPPLY	110-120 Volts AC-60 Cycles — RATING 1.8 Amp. @ 117 Volts AC
TUNING RANGE-	Any Three UHF Channels

UHF-103 plus Hardware Parts Kit "C" for Following GE Models:	UHF-103 plus Hardware Parts Kit "D" for Following GE Models:
17C125, 20C107, 21T1, 21T3, 21T6, 21C201, 21C202, 21C204, 21C206, 21C208, 21C208U, 21C210, 21C214.	17C113, 17C117, 17C120, 17T7, 17T10, 17T11, 17T12, 20T2, 21T2, 21T4, 21T5.

PRE-ALIGNMENT INSTRUCTIONS

When adjusting the RF and oscillator tuning slugs, avoid forcing the slugs, especially in the extreme clockwise direction, as the coils may become distorted.
The use of fiber type alignment tools is recommended as they are less likely to injure the coils.

IF ALIGNMENT

The unit is factory aligned to operated on Channel 5. However, if a station is operating on Channel 5 in that area, the unit should be realigned to Channel 6 to avoid possible interference.
To change from channel 5 to channel 6 operation:

1. Turn A1 approximately 3 turns counter clockwise.
2. Turn A2 approximately 2½ turns counter clockwise.

IF ALIGNMENT TO EITHER CHANNEL 5 OR 6 USING SIGNAL GENERATOR

Turn on tuner unit and TV receiver.
Set signal generator to channel frequency selected. (Channel 5 - 79MC, Channel 6 - 85MC).
Modulate the output of generator 30% at 400∿ and set output level to approximately 500 microvolts.
Connect generator across either tuner antenna terminal and ground.
Adjust A1 and A2 for maximum bar pattern on picture tube of receiver.

UHF ADJUSTMENTS

Set the tuner knob ring to "UHF-1" position.
Set receiver channel switch to proper channel as previously determined by the IF Alignment (Channel 5 or 6). Set fine tuning to center of its range.
Preset oscillator core A3 fully counter clockwise. Turn A3 slowly clockwise until UHF picture and sound are received.
If two strong picture responses are noted, use the first one from counter clockwise position. Avoid excess pressure on A3 as coil damage might result.
Adjust RF tuning core, A4, for maximum picture signal.
Readjust A3 so that the fine tuning control of the receiver will permit tuning into the audio bars or beats.
Repeat above procedure for each of the two remaining UHF positions if other UHF stations are operating in the area.

CAUTION: Do not make electrical connection between the VHF receiver chassis and the converter chassis as such a connection would connect the insulated control shafts of the receiver to one side of the AC line.

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PARTS LIST AND DESCRIPTIONS

GENERAL ELECTRIC
MODEL UHF-103

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		General Electric PART No.	STANDARD REPLACEMENT		
V1	UHF Oscillator	6AF4	6AF4	7DK	
V2	IF Amplifier	6BK7	6BK7	9AJ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	General Electric PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	■50	150	RCE-150	AFH3-08		XC 002		FP311.4	TVL-3437	
B	▲20	150								
C	20	150								
C2A	5		♦RCW-3070							
B	5									
C	2									
D	2									
C3	2		RCW-3082							
C4	2		RCW-3082							
C5	1		RCW-3083							
C6	1		RCW-3083							
C7	1.5		RCW-3084							
C8	1		RCN-001							
C9	6		RCW-3088							
C10	6		RCW-3088							
C11	800		RCW-3037	BPD-0008	DD-801	TM5T8	GP2L-102	DC-521	5GA-T8	
C12	1		RCN-001							
C13	18		RCW-3086		TCZ-18		NP0K-180			
C14	10		RCW-3085	SH0NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C15	800		RCW-3037	BPD-0008	DD-801	TM5T8	GP2L-102	DC-521	5GA-T8	
C16	800		RCW-3037	BPD-0008	DD-801	TM5T8	GP2L-102	DC-521	5GA-T8	
C17	47		RCW-3087	SI47N750	TCN-47		N750K-470	NT-5447	5TCU-Q47	
C18	800		RCW-3037	BPD-0008	DD-801	TM5T8	GP2L-102	DC-521	5GA-T8	
C19	800		RCW-3037	BPD-0008	DD-801	TM5T8	GP2L-102	DC-521	5GA-T8	
C20	800		RCW-3037	BPD-0008	DD-801	TM5T8	GP2L-102	DC-521	5GA-T8	

♦ Items C2A, C2B, C2C, C2D are combined in one unit.

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	General Electric PART No.	IRC PART No.	
R1	680KΩ	½	URD-117	BTS-680K	
R2	10KΩ	½	URD-073	BTS-10K	
R3	220Ω	½	URD-033	BTS-220	
R4	100Ω	½	URD-025	BTS-100	
R5	220Ω	½	URD-033	BTS-220	
R6	100Ω	½	URD-025	BTS-100	
R7	6800Ω	½	URD-069	BTS-6800	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	General Electric PART No.	IRC PART No.	
R8	220Ω	½	URD-033	BTS-220	
R9	150KΩ	½	URD-101	BTS-150K	
R10	150KΩ	½	URD-101	BTS-150K	
R11	220Ω	½	URD-033	BTS-220	
R12	220Ω	1	URE-033	BTA-220	
R13	22KΩ	½	URD-081	BTS-22K	

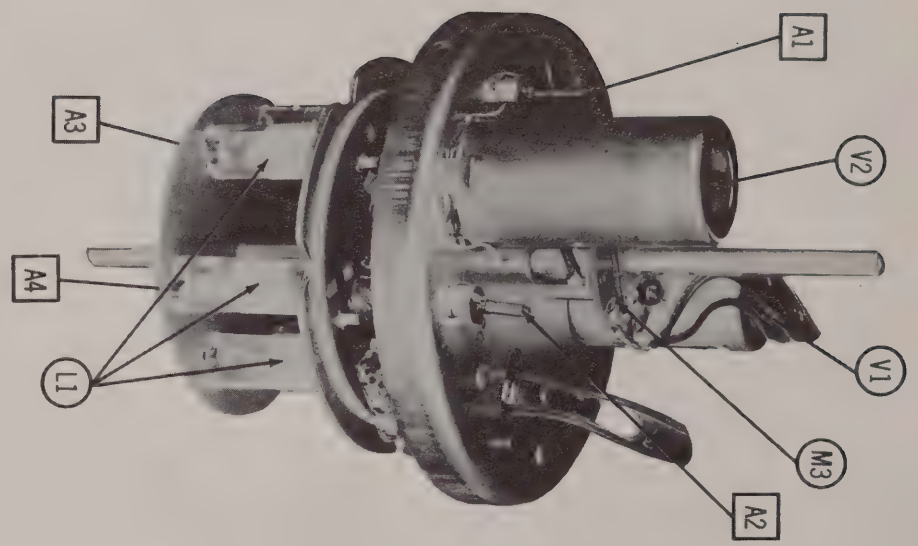
TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	General Electric PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC @ .18A	118V .045ADC	6.3VAC @ .66A		RTP-313				

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT	General Electric PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.
M1	.045	RER-016	NB5	5M4	1003	6S75	75

CHASSIS—TOP VIEW



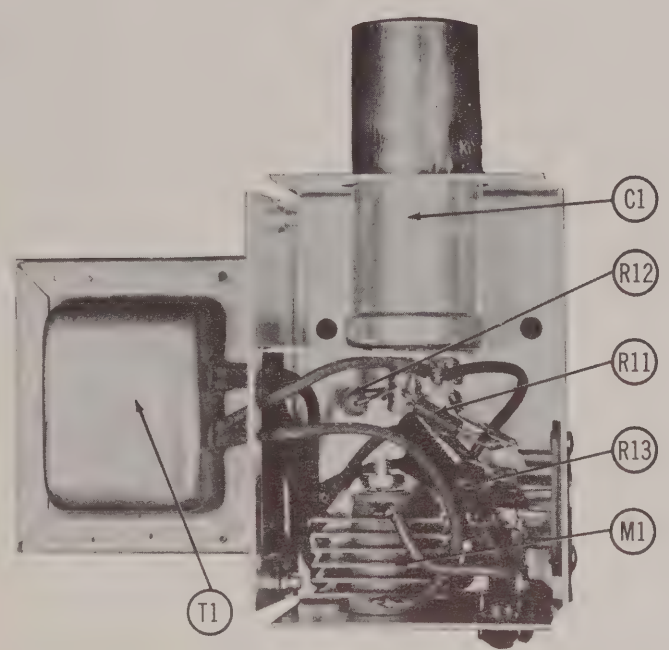
PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

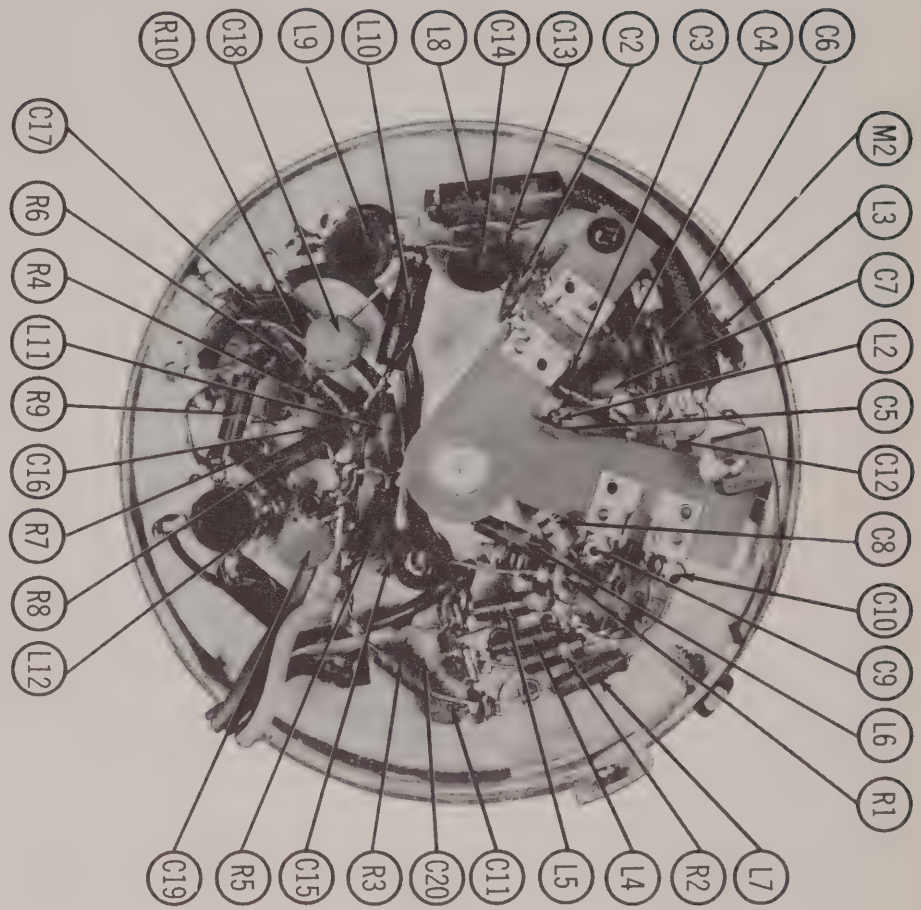
ITEM No.	PART NAME	General Electric PART No.	NOTES
M2	Crystal Board Assy.	RMM-245	Mixer (1N72)
M3	Switch	RSW-095	VHF-UHF Selector
	Knob	RDK-261	Fine Tuning
	Knob	RDK-302	UHF Selector

COILS (RF-IF)

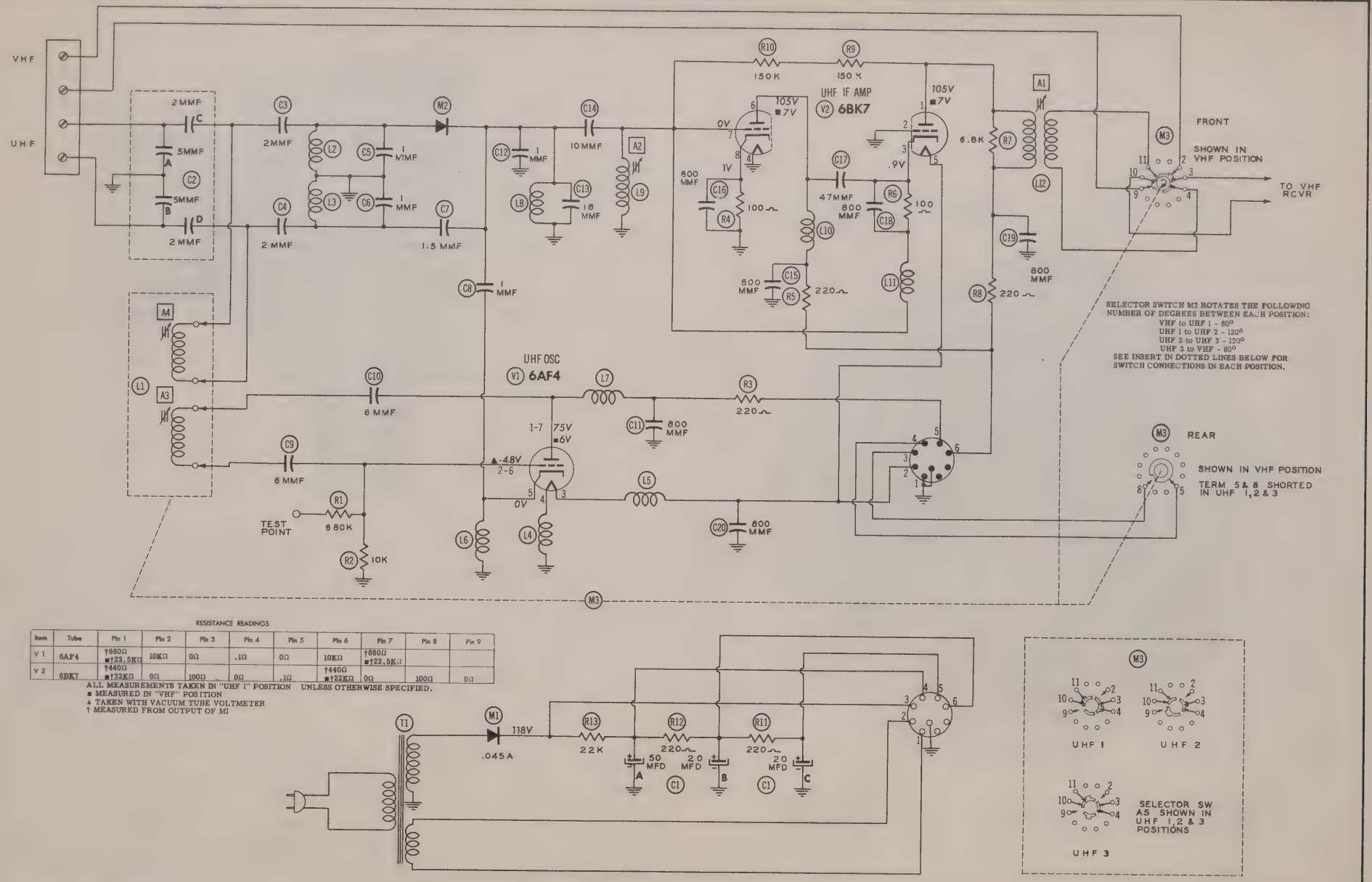
ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	General Electric PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	UHF Ant. & Osc. Coil Assy.	0Ω		RLX-037				UHF 1, 2, 3
L2	RF Choke	0Ω		RLI-168				
L3	RF Choke	0Ω		RLI-168				
L4	Fil. Choke	0Ω		RLI-189				
L5	Fil. Choke	0Ω		RLI-189				
L6	Cathode Choke	0Ω		RLI-189				
L7	RF Choke	0Ω		RLI-189				
L8	RF Choke	1.8Ω		RLI-122				2.2 Microhenries (IRC part #CLA)
L9	UHF IF Input	0Ω		RTL-140				
L10	Feedback Coil	0Ω		RLI-187				
L11	RF Choke	.1Ω		RLI-188				
L12	UHF IF Output Trans.	0Ω	0Ω	RTL-141				



CHASSIS—BOTTOM VIEW



GENERAL ELECTRIC
MODEL UHF-103



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AF4	†660Ω ■†22.5KΩ	10KΩ	0Ω	.1Ω	0Ω	10KΩ	†660Ω ■†22.5KΩ		
V 2	6BK7	†440Ω ■†22KΩ	0Ω	100Ω	0Ω	.1Ω	†440Ω ■†22KΩ	0Ω	100Ω	0Ω

ALL MEASUREMENTS TAKEN IN "UHF 1" POSITION UNLESS OTHERWISE SPECIFIED.
■ MEASURED IN "VHF" POSITION
▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM OUTPUT OF M1

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2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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GOTHAM
MODEL 319

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MODEL 319

GOTHAM
MODEL 319

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GOTHAM MODEL 319

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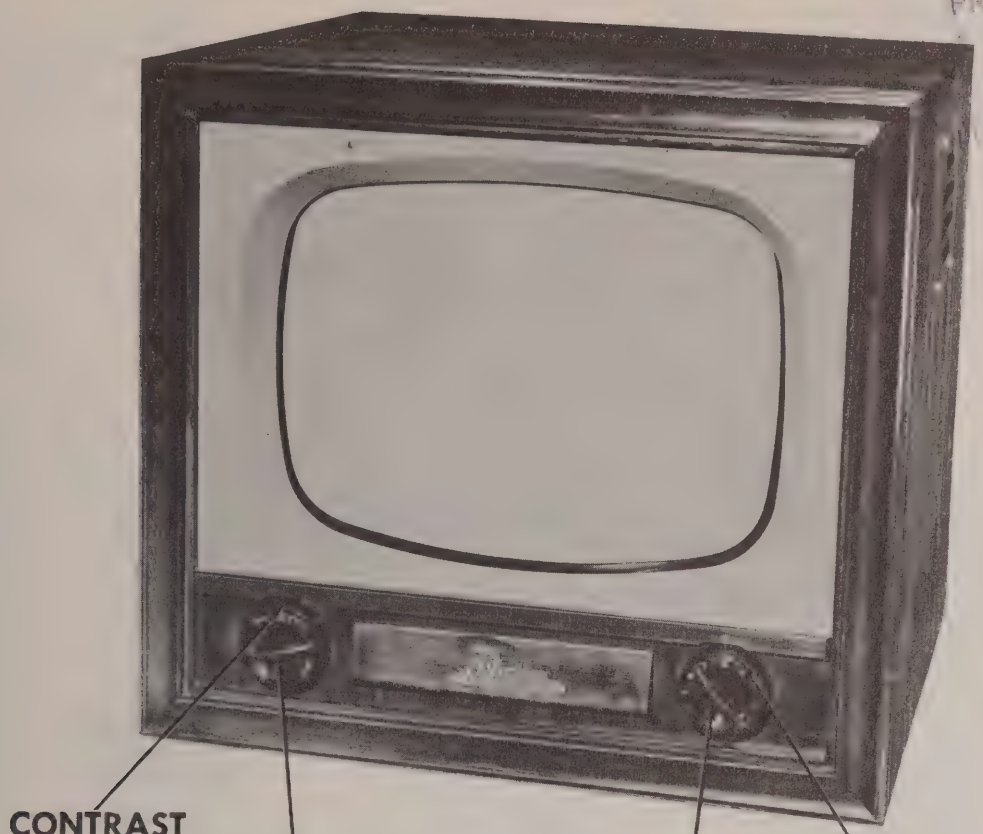

GOTHAM
MODEL 319

TRADE NAME	Gotham Model 319
MANUFACTURER	Harold Shevers Inc., 123 West 64th. St., New York 23, N.Y.
TYPE SET	Television Receiver
TUBES	Nineteen

POWER SUPPLY 110-120 Volts AC/DC RATING 1.44 Amp @ 117 Volts AC
TUNING RANGE—Channels 2 thru 13, Video IF 26.75MC, Sound IF 22.25MC (Intercarrier).

INDEX

Alignment Instructions 6, 7
Disassembly Instructions 18
Horizontal Sweep Circuit Adjustments 11
Parts List and Descriptions 14, 15
Photographs
Cabinet-Rear View 11
Capacitor and Alignment Identification 4, 9
Chassis-Top View 3
RF Tuner 10
Photographs (Cont)
Resistor and Inductor identification 13, 16
Resistance Measurements 8
Servicing in the Field 18
Schematic 2
Trouble Shooting Aids 12, 17
Tube Failure Check Chart 5
Tube Placement Chart (Bottom View) 8
Tube Placement Chart (top View) 5

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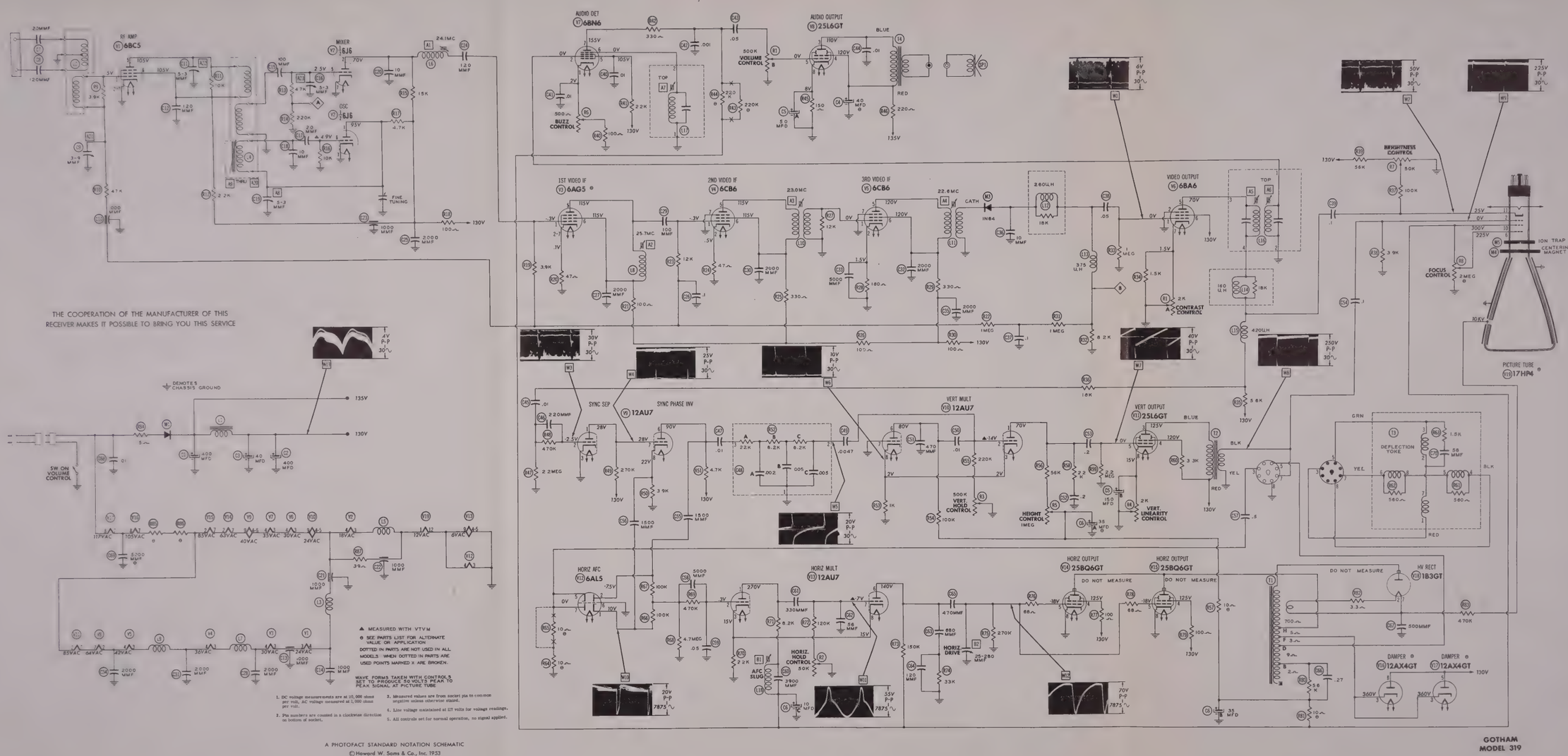
RF AMP V1 6BC5
MIXER V2 6J6
OSC V3 6J6
AUDIO DET V7 6BN6
AUDIO OUTPUT V8 25L6GT
1ST VIDEO IF V3 6AG5
2ND VIDEO IF V4 6CB6
3RD VIDEO IF V5 6CB6
VIDEO OUTPUT V6 6BA6
SYNC SEP V9 12AU7
SYNC PHASE INV
VERT MULT V10 12AU7
VERT OUTPUT V11 25L6GT
HORIZ AFC V12 6AL5
HORIZ MULT V13 12AU7
HORIZ OUTPUT V14 25BQ6GT
HORIZ OUTPUT V15 25BQ6GT
HV RECT V16 1B3GT
DAMPER V16 12AX4GT
DAMPER V17 12AX4GT
PICTURE TUBE V18 17HP4
VOLUME CONTROL
BUZZ CONTROL
TONE
BRIGHTNESS CONTROL
FOCUS CONTROL
CONTRAST CONTROL
VERT. HOLD CONTROL
VERT. LINEARITY CONTROL
HEIGHT CONTROL
HORIZ. HOLD CONTROL
HORIZ DRIVE
AFC SLUG
FINE TUNING
DEFLECTION YOKE
ION TRAP
CENTERING MAGNET
SW ON VOLUME CONTROL
DENOTES CHASSIS GROUND
DO NOT MEASURE
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
▲ MEASURED WITH VTVM
⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DOTTED IN PARTS ARE NOT USED IN ALL MODELS WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN.
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE
1. DC voltage measurements are at 20,000 ohms per volt, AC voltage measured at 1,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation, no signal applied.
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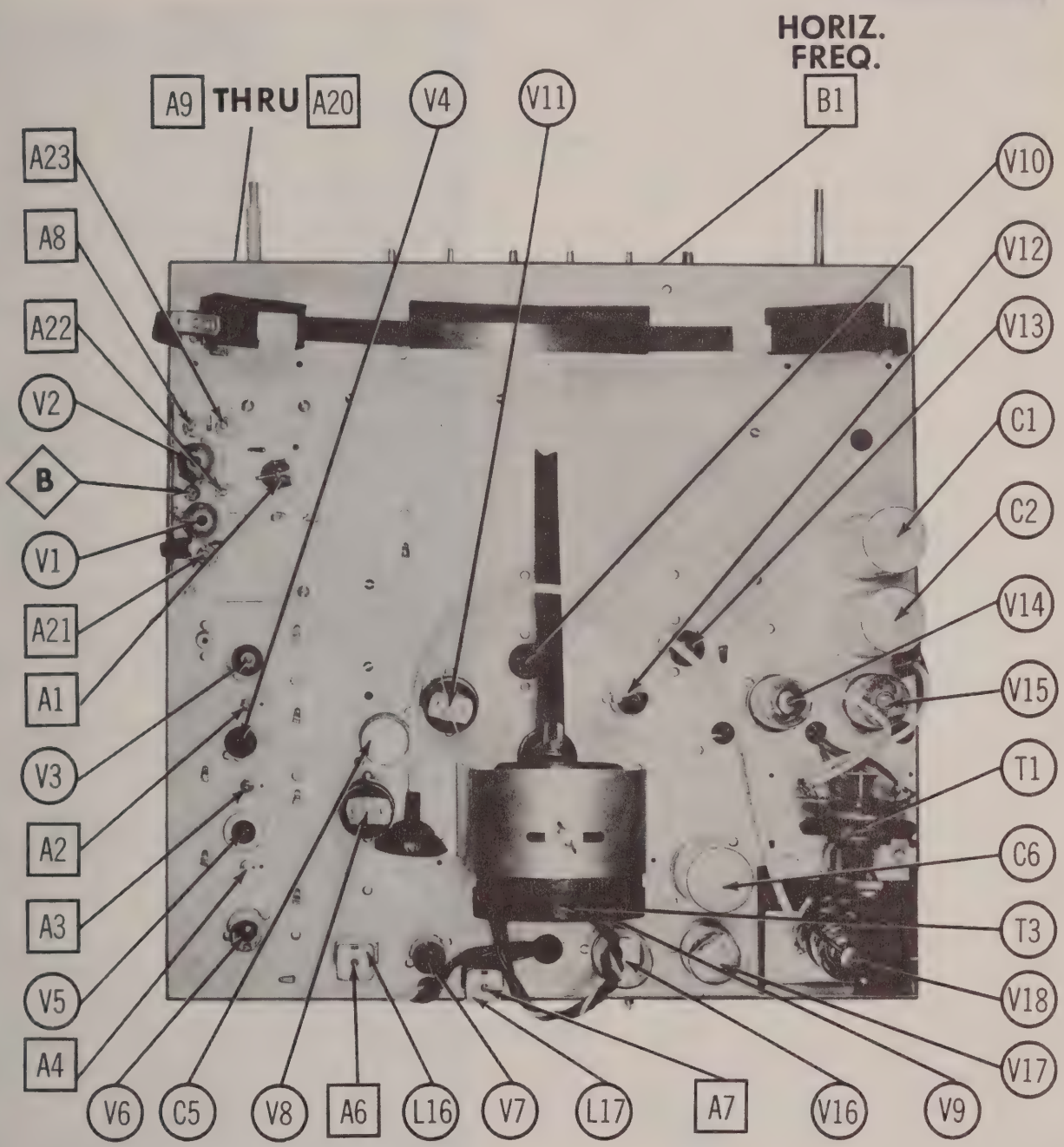
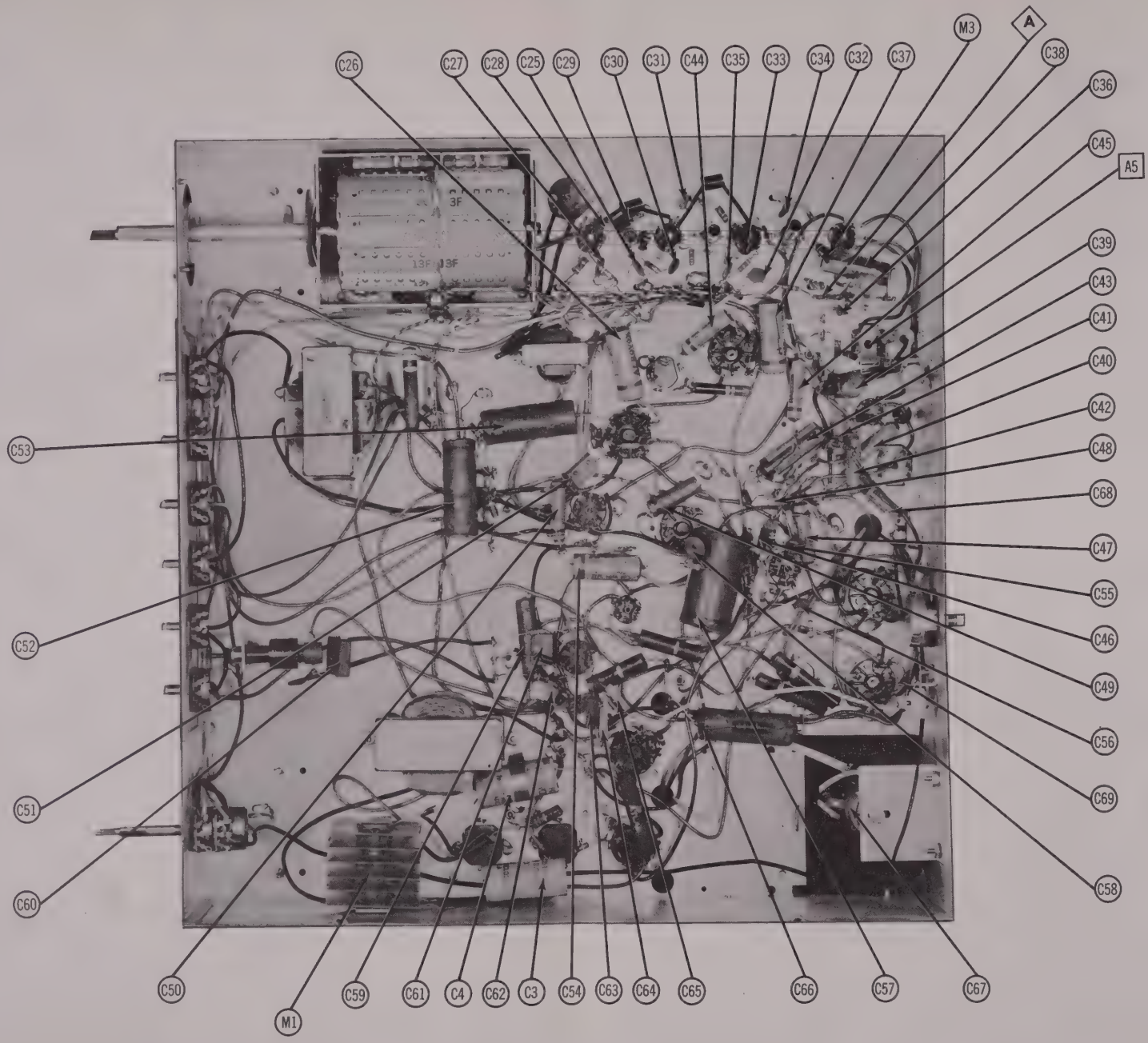
GOTHAM MODEL 319



CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

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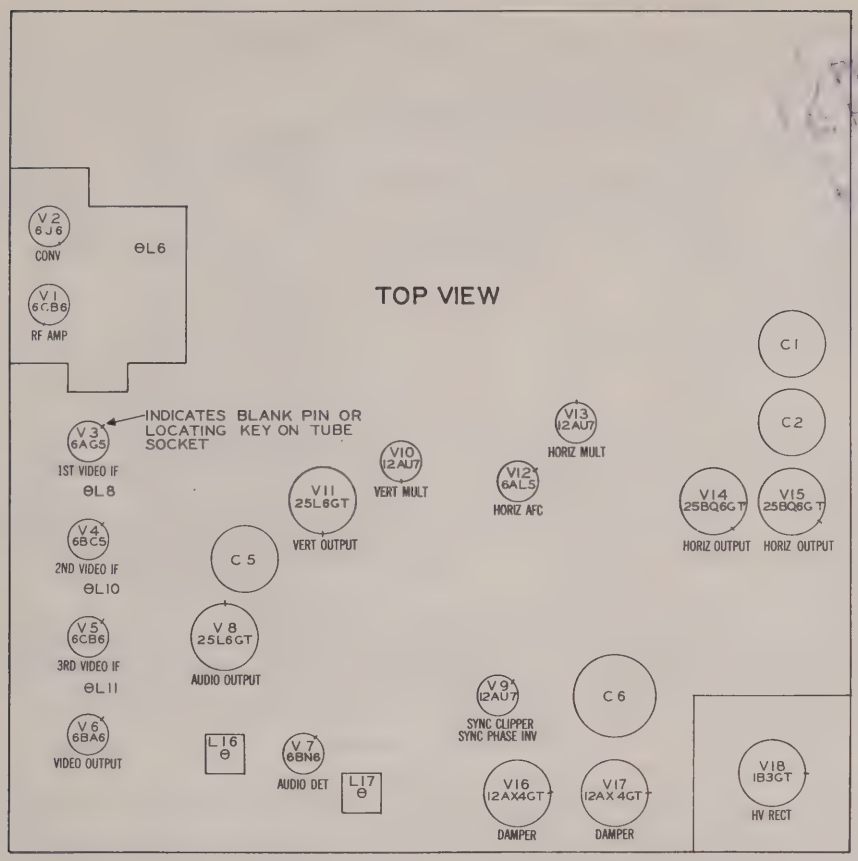
GOTHAM
MODEL 319

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms.
Refer to tube placement chart for location and type of tube.

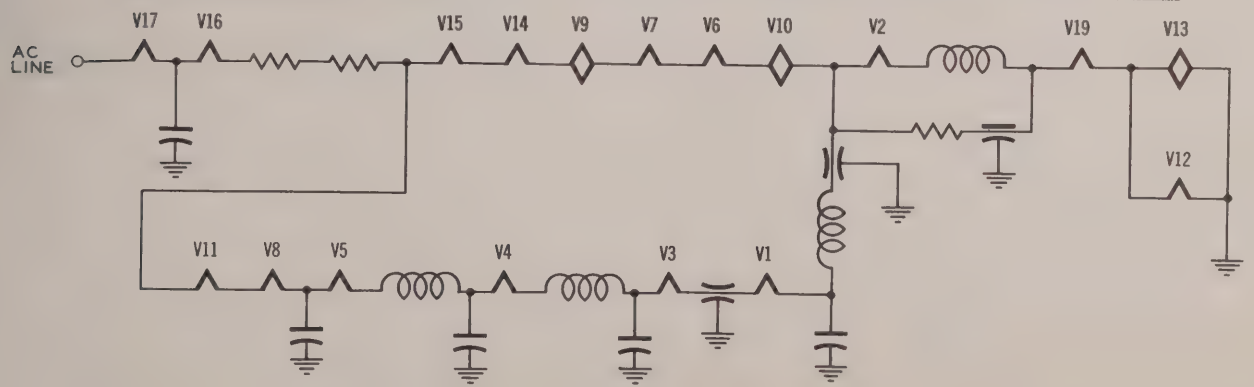
POWER SUPPLY FAILURE
No raster, no sound - Selenium Rectifier (M1)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5, V6
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V6, V19
Has pic, no sound - V7, V8

SYNC FAILURE
No vert. sync -V9, V10
No horiz. sync - V 9, V12, V13
No vert. or horiz. sync - V9

SWEEP FAILURE
No raster, has sound - V13, V14, V15, V16, V17, V18, V19
No vertical deflection - V10, V11
Poor vert. linearity or foldover - V10, V11
Poor horiz. linearity or foldover - V13, V14, V15, V16, V17
Narrow picture - V13, V14, V15, V16, V17, M1
Vert. off freq. - V9, V10
Horiz. off freq. - V9, V12, V13

Note. Since this receiver employs tubes in a series-parallel filament network, an open filament in any tube in series may cause the set to inoperative, (See filament network below).



ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.
Use an isolation transformer to protect the test equipment.

VIDEO IF ALIGNMENT

Remove the converter tube, V2, and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the ungrounded side of C37. Connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	24.1MC (Unmod)	Any	DC probe to point (A) Common to chassis.	A1	Adjust for maximum deflection.
2.	"	"	25.7MC	"	"	A2	"
3.	"	"	23.0MC	"	"	A3	"
4.	"	"	22.6MC	"	"	A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	24MC (10MC Swp)	22.25MC 23.75MC 26.75MC	Any	Vert. Amp. to point (A). Low side to chassis.		Check for response similar to Fig. 1. If necessary retouch A1 through A4 for desired response.

SOUND ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Connect a TV antenna to the receiver antenna terminals through a variable attenuator. Turn the set on and tune in a tone modulated TV signal. Adjust the attenuator to reduce the signal input below the level required for limiting at the 6BN6. A hiss similar to super regeneration is heard below this level. Adjust the sound trap A5, the sound take-off coil, A6 and the quadrature coil, A7 for maximum sound of best quality. If, during these adjustments the signal rises above the limiting level (hiss disappears) increase the attenuation until the hiss returns.
Adjust the buzz control for minimum intercarrier buzz. The contrast control should be set for normal contrast during these adjustments.

OSCILLATOR ALIGNMENT

Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels it may be possible to correct them in one step using A8.
It should be noted that this is an all channel oscillator circuit adjustment and should not be used to correct any individual channel.
If adjustment of A8 will not bring all channels well within the range of the fine tuning control it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel adjustment screws are reached through a hole just to the right of the channel switch shaft.
The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.
Connect bias battery as under Video IF Alignment.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. to point (A). Low side to chassis.	A9	Adjust to place video marker at 50% on high frequency slope of IF response curve as in Fig. 2.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A10	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A11	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A12	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A13	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A14	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A15	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A16	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A17	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A18	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A19	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A20	

ALIGNMENT INSTRUCTIONS (CONT.)

RF AND MIXER ALIGNMENT

Leave bias battery connected as above.
Connect the synchronized sweep voltage from the signal generator to the horizonal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. Amp. thru 10KΩ to point (B). Low side to chassis.	A21, A22 A23	Adjust for response similar to Fig. 3.
8.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check for response similar to Fig. 3. If markers fall below 70% on any channel make slight compromise adjustments of A21, A22 & A23 with channel switch set to that channel then recheck all other channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

4.5MC TRAP ALIGNMENT

Tune in a TV signal and observe the picture for the presence of 4.5MC beat indication.
If necessary, adjust A5 slightly for minimum beat indication in picture.

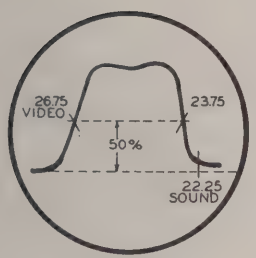


FIG.1

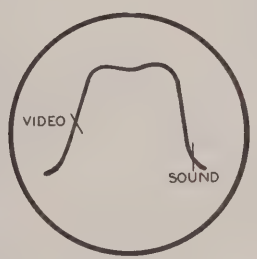


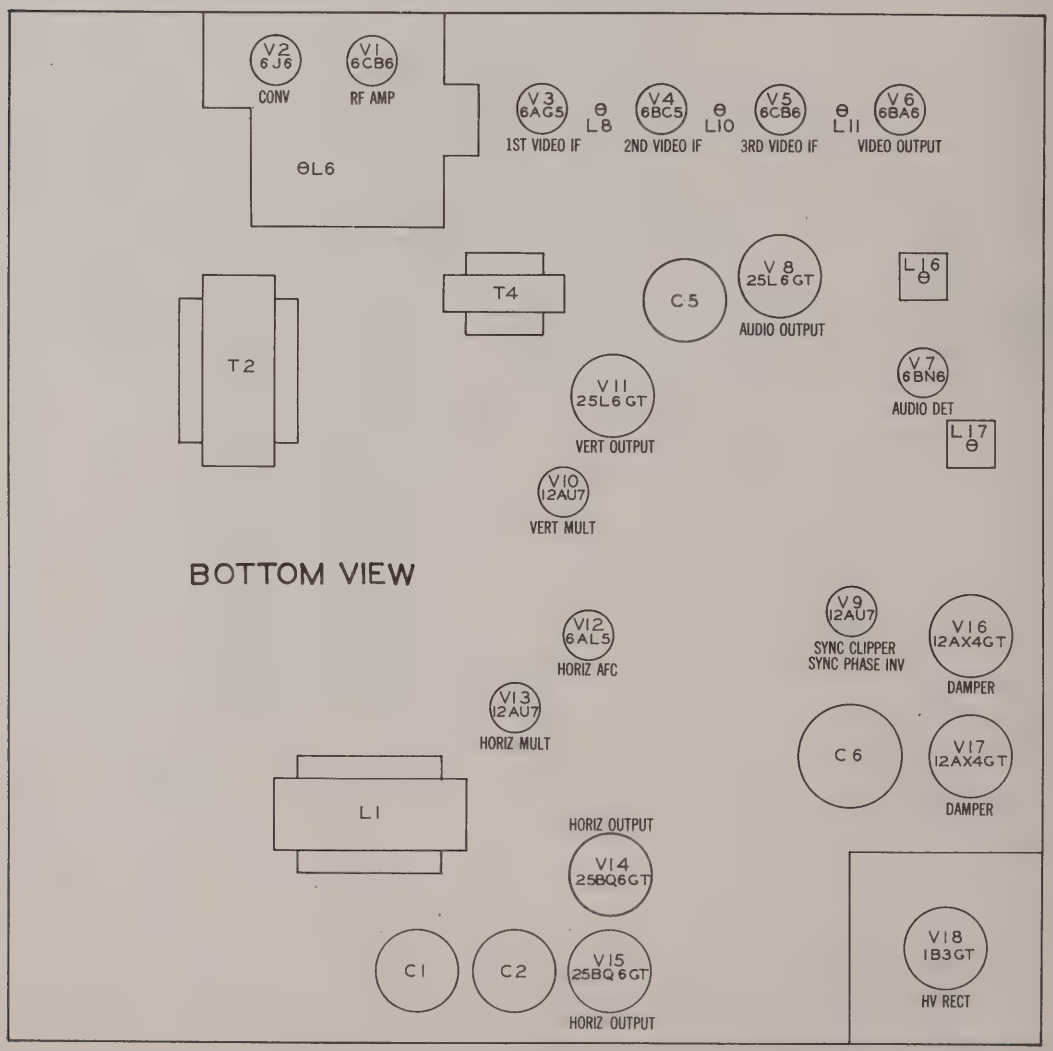
FIG.2

FIG.3

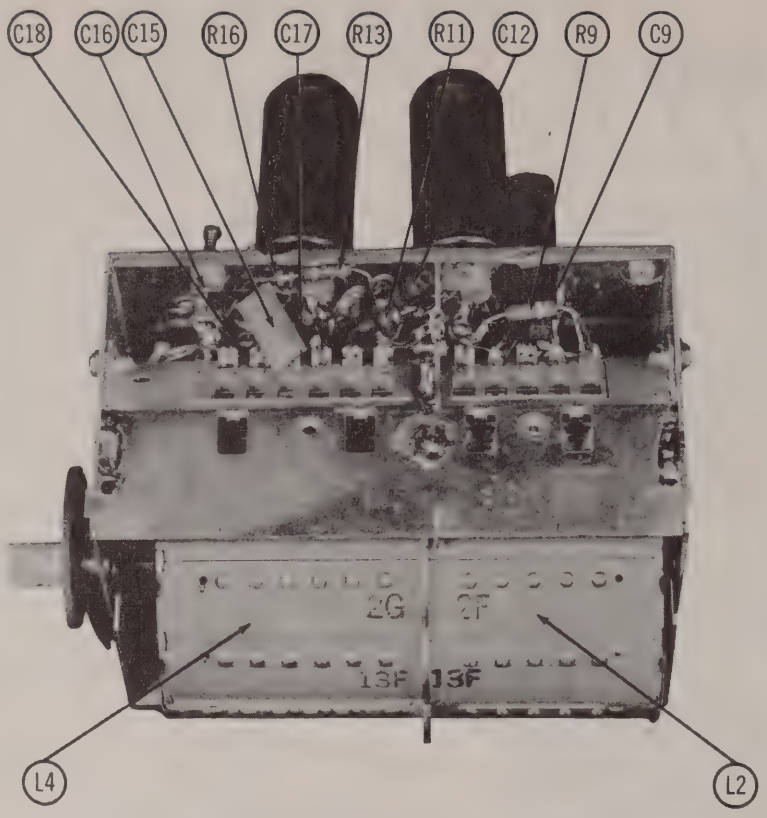
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	2 Meg	0Ω	8Ω	5Ω	†2.3KΩ	†2.3KΩ	0Ω		
V 2	6J6	†4.8KΩ	†15KΩ	3.5Ω	5Ω	224KΩ	10KΩ	0Ω		
V 3	6AG5	2 Meg	47Ω	8Ω	10Ω	†310Ω	†310Ω	47Ω		
V 4	6CB6	2 Meg	47Ω	10Ω	12Ω	†540Ω	†540Ω	0Ω		
V 5	6CB6	.3Ω	180Ω	12Ω	14Ω	†440Ω	†440Ω	0Ω		
V 6	6BA6	1 Meg	0Ω	8Ω	11Ω	†5.6KΩ	†10Ω	100Ω		
V 7	6BN6	200Ω	2.2Ω	11Ω	13Ω	†2.2KΩ	2.8Ω	♦115KΩ		
V 8	25L6GT	INF	14Ω	†412Ω	220Ω	50Ω	INF	20Ω	150Ω	
V 9	12AU7	†270KΩ	2.6Meg	0Ω	13Ω	13Ω	†4.7KΩ	†270KΩ	3.9KΩ	15Ω
V 10	12AU7	♦850KΩ	375KΩ	1KΩ	5Ω	5Ω	♦105KΩ	0Ω	1KΩ	8Ω
V 11	25L6GT	†10Ω	25Ω	†110Ω	†3.3KΩ	2.2Meg	INF	20Ω	625Ω	
V 12	6AL5	4.8Meg	4.8Meg	0Ω	2Ω	20Ω	INF	20Ω		
V 13	12AU7	♦13.8KΩ	5.4Meg	2.2KΩ	0Ω	0Ω	♦155KΩ	160KΩ	2.2KΩ	2Ω
V 14	25BQ6GT	INF	20Ω	200Ω	†110Ω	270KΩ	270KΩ	15Ω	0Ω	Top Cap 5Ω
V 15	25BQ6GT	205Ω	25Ω	INF	†110Ω	270KΩ	270KΩ	20Ω	0Ω	Top Cap 5Ω
V 16	12AX4GT	3.5Ω	INF	1 Meg	INF	†10Ω	INF	190Ω	195Ω	
V 17	12AX4GT	3.9KΩ	INF	1 Meg	INF	†10Ω	INF	195Ω	200Ω	
V 18	1B3GT		PINS 1 - 8 HAVE INF RESISTANCE							Top Cap ♦705Ω
V 19	17HP4	3.5Ω	3.9KΩ	Pin 6 ♦6KΩ	Pin 10 ♦5.6KΩ	Pin 11 110KΩ	Pin 12 2Ω			

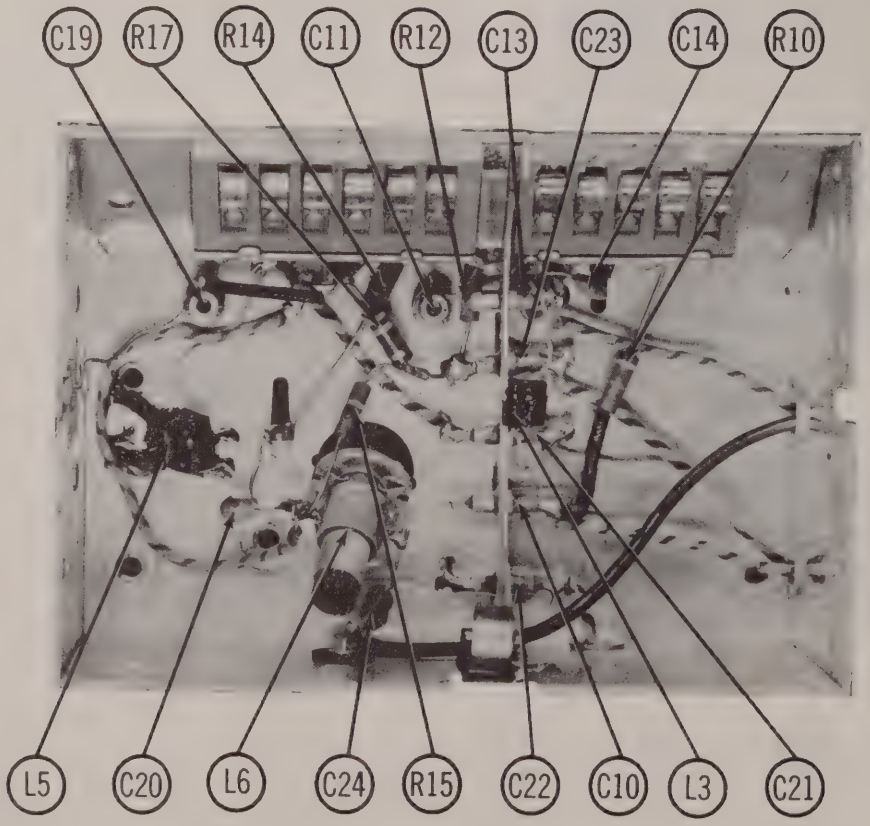
† MEASURED FROM OUTPUT OF M1
♦ MEASURED FROM PIN 3 OF V17.



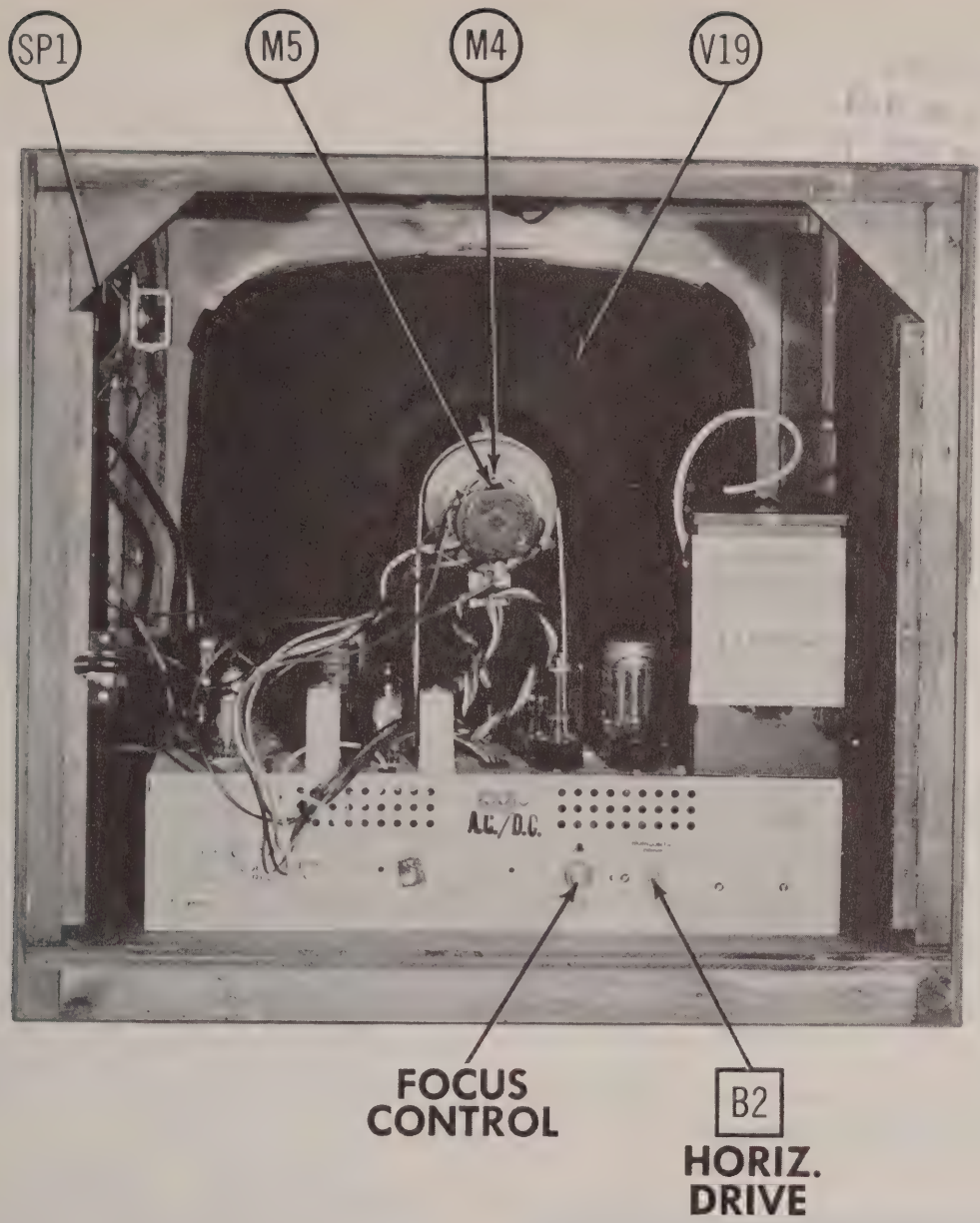
TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CABINET–REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Set the horizontal hold control at the center of its range and adjust the AFC slug (B1) until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer (B2) counter clockwise as far as possible consistent with good horizontal linearity and brightness.

If vertical white lines appear in the picture back off B2 in a clockwise direction just enough to eliminate the lines.

If B2 is adjusted, slight readjustment of B1 may be necessary.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Check yoke for open. Check solder connections at the horizontal output transformer and the yoke plug.

INSUFFICIENT SWEEP

Check by substitution, V13, V14, V15, V16 and V17. Check B plus. If low, check selenium rectifier M1.

Check waveform W12;

If Insufficient	If Sufficient
Check setting of B2. Check components of V13. Check coupling network between V13 and V14 (and V15).	Check components of horizontal output tubes. Check T1 and T3A. Check damper circuit.

DRIVE LINES

Substitute V14 and V15. Check setting of B2 (Horizontal Drive Control). Check coupling network between V13 and the horizontal output tubes.

COMPRESSED AT THE LEFT SIDE

Check by substitution. The horizontal output and the damper tubes. Check coupling and waveshaping network between the horizontal oscillator and the output tubes.

VERTICAL

LOSS OF SWEEP

Substitute V10 and V11.

Check waveform;

If Unsatisfactory	If Satisfactory
Check components of V10. Check coupling capacitor C53.	Check components of V11. Check T2 and T3B.

INSUFFICIENT SWEEP

Substitute V10 and V11. Follow procedure outlined under LOSS OF SWEEP .

COMPRESSED AT TOP

Substitute V10. Check waveform W7;

If Unsatisfactory	If Satisfactory
Check components of V10 and coupling between V10 and V11.	Substitute V11 and check T2 and T3B.

SYNC

HORIZONTAL

LOSS OF SYNC

Check by substitution, V9, V12 and V13.

Check waveform W10;

IF Unsatisfactory	If Satisfactory
Check waveform W3.	Check all components of the horizontal oscillator V13.

Check waveform W3;

If Unsatisfactory	If Satisfactory
Check coupling network between V6 and V9.	Check components of sync clipper and sync splitter.

CRITICAL SYNC

Substitute V9, V12, and V13. Follow procedure outlined under LOSS OF SYNC.

PULLING PICTURE AND INTERMITTENT TEARING (Fig. 1)

Check C59 for open. Check components of V19 and V13.

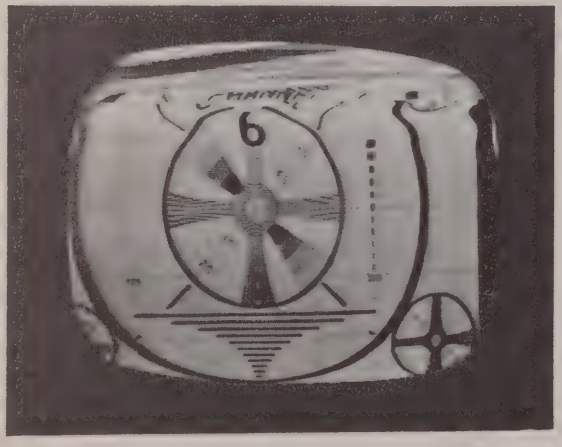


Fig. 1. PULLING PICTURE AND INTERMITTENT TEARING
SEE HORIZONTAL SYNC

VERTICAL

LOSS OF SYNC

Substitute V9 and V10.

Check waveform W5;

If Unsatisfactory	If Satisfactory
Check components of V9. Check the vertical integrating network between V9 and V10.	Check components of V10. Check coupling and waveshaping network between V10 and V11.

TRIGGERING

Substitute V10. Dress filament leads away from grid leads of the vertical multivibrator.

DECREASED HEIGHT AND INVERTED (Fig. 2).

Check C52 and R58 for open.

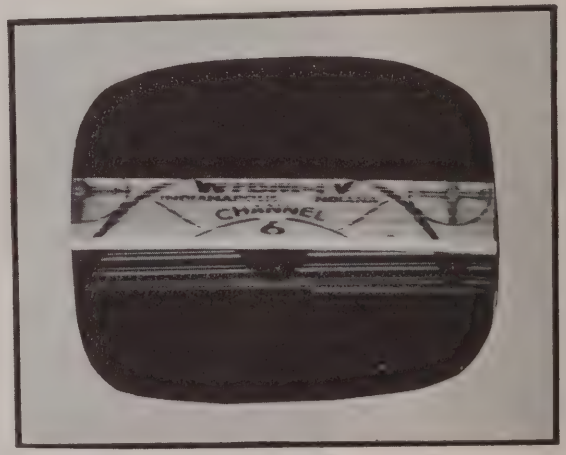
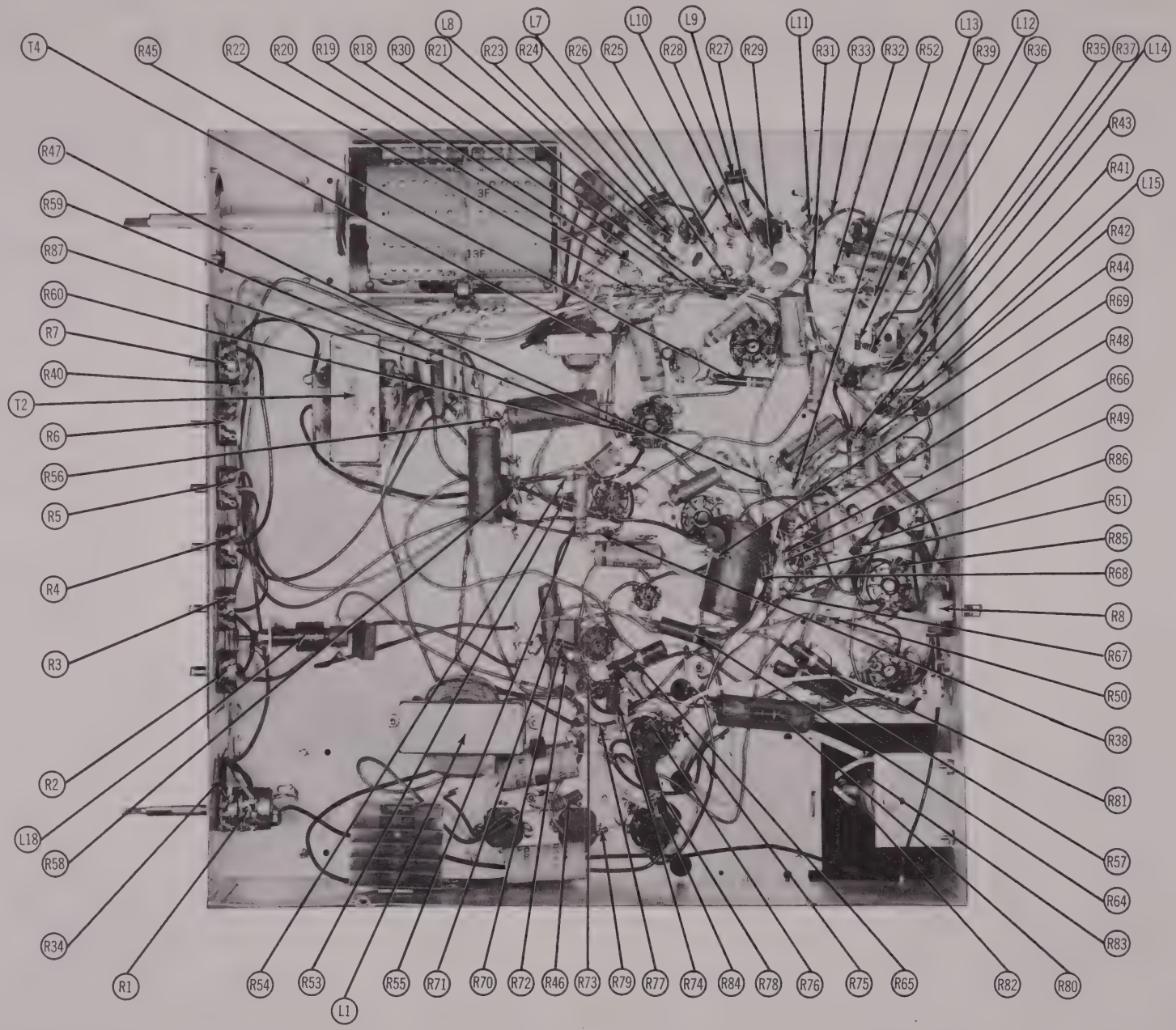


Fig. 2. DECREASED HEIGHT AND INVERTED.
SEE VERT. SYNC



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PROPERTY OF

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: GOTHAM PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1	RF Amplifier	6BC5	6BC5	7BD	
V2	Converter	6J6	6J6	7BF	
V3A	1st. Video IF Amp.	6AG5	6AG5	7BD	
B	1st. Video IF Amp.	6BC5	6CB5	7BD	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Output	6BA6	6BA6	7BK	
V7	Audio Detector	6BN6	6BN6	7DF	
V8	Audio Output	25L6GT	25L6GT	7S	
V9	Sync Clipper-Sync Phase Inv.	12AU7	12AU7	9A	
V10	Vert. Mult.	12AU7	12AU7	9A	
V11	Vert. Output	25L6GT	25L6GT	7S	
V12	Horiz. AFC	6AL5	6AL5	6BT	
V13	Horiz. Mult.	12AU7	12AU7	9A	
V14	Horiz. Output	25BQ6GT	25BQ6GT	6AM	
V15	Horiz. Output	25BQ6GT	25BQ6GT	6AM	
V16A	Damper	12AX4GT	12AX4GT	4CG	
B	Damper	25W4GT	25W4GT	4CG	Used in early Models
V17A	Damper	12AX4GT	12AX4GT	4CG	
B	Damper	25W4GT	25W4GT	4CG	Used in early Models
V18	HV Rectifier	1B3GT	1B3GT	3C	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: GOTHAM PART No.	REPLACEMENT DATA: SYLVANIA PART No.		RTMA BASE TYPE	NOTES
V19A	17HP4	17HP4		12C	① Circuit changes necessary
		17RP4		12C	
B	21FP4A	21FP4A		12C	
		21FP4 ①			

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: GOTHAM PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1	▲400	175								
C2	▲400	175								
C3	40	150		PRS150/40		BR4015A		TC48	TVA-1413	
C4	40	150		PRS150/40		BR4015A		TC48	TVA-1413	Note 1
C5A	▲50	25		AFH2-05		B007		WP206	TVL-2230	
B	■150	25								
C6A	■35	450		AFH4-16		C033		FP445	TVL-4771	Note 2
B	▲35	450								
C	▲10	450								
D	50	50								
C7	120	500								
C8	120	500								
C9	3-9				829-3					
C10	1000			CN-1-001	MFT-1000				503C-D1	
C11	.5-3				829-3			CT565A		
C12	120			SII20	D6-121	TM5T12	GP2K-121	UC-5342	5GA-T12	
C13	1000			CN-1-001	MFT-1000				503C-D1	
C14	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C15	100			SII00	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C16	.5-3				829-3			CT565A		
C17	20			SI20NP0	TCZ-20		NP0K-200	ZT-542	5TCC-Q2	
C18	10			SII0N750	TCN-10		N750K-100	NT-541	5TCU-Q1	
C19	.5-3				829-3			CT565A		
C20	10			SII0N750	TCN-10		N750K-100	NT-541	5TCU-Q1	
C21	1000			CN-1-001	MFT-1000				503C-D1	
C22	1000			CN-1-001	MFT-1000				503C-D1	
C23	1000			CN-1-001	MFT-1000				503C-D1	
C24	120			SII20	D6-121	TM5T12	GP2K-121	UC-5312	5HK-T12	
C25	2000			BPD-002	DD-202	TM5D2	801-002	DC-522	5HK-D2	
C26	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C27	2000			BPD-002	DD-202	TM5D2	801-002	DC-522	5HK-D2	
C28	2000			BPD-002	DD-202	TM5D2	801-002	DC-522	5HK-D2	
C29	100	500		1468-0001	D6-101	5W5T1	GP1K-101	MC235	1FM-31	
C30	2000			BPD-002	DD-202	TM5D2	801-002	DC-522	5HK-D2	
C31	2000			BPD-002	DD-202	TM5D2	801-002	DC-522	5HK-D2	
C32	2000			BPD-002	DD-202	TM5D2	801-002	DC-522	5HK-D2	
C33	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C34	2000			BPD-002	DD-202	TM5D2	801-002	DC-522	5HK-D2	
C35	2000			BPD-002	DD-202	TM5D2	801-002	DC-522	5HK-D2	
C36	10			SII0	D6-100	5W5Q1	GP1K-100	UC-541	5GA-Q1	
C37	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C38	.05	600		P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C39	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C40	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C41	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C42	.001	400		P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C43	.05	600		P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C44	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C45	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C46	220	500		1469-00025		5R5T25		MCB240		
C47	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C48A	.002			P688-002	} ePC-100	PTE6D2	} e1405-01	PT622	} e101C1	
B	.005			P688-005		PTE6D5		PT625		
C	.005			P688-005		PTE6D5		PT625		
C49	.0047	400		P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C50	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C51	470	500		1469-0005		5R5T5		MCB245	MS-35	
C52	.2	400						TP429		
C53	.2	400						TP429		
C54	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C55	1500			BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: GOTHAM PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C56	1500			BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C57	.5	600		684-5		PJ6P5		PT605	TC-5	
C58	5000			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C59	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C60	3900	500		1464-004		1DR5D4		MCB3483	MS-24	
C61	330	500								
C62	56	500							MS-37	
C63	680	500		1479-0007		2R5T7				
C64	120	500						MCB245	MS-35	
C65	470	500		1469-0005		5R5T5				
C66	.27	200							20DK-T5	
C67	500	20000		HV20C	TV3-501	MMC-20T5	413-501		4TM-S1	
C68	.01	400		P488-01		PTE4S1		PT 411	5HK-D5	
C69	5000			BPD-005	MD-502	TM5D5	811-005	DC-525		Note 3
C70	56									

♦ Items C48A, C48B, C48C, R52A, R52B, R52C are combined in one unit.
Note 1. Some Models use 20MFD in this application.
Note 2. C6A may be 10MFD in some models.
Note 3. Not used in all Models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GOTHAM PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2000Ω	½	PCS-3	QJ-463*			UF23L } †	Contrast-Panel
B	500KΩ						UR55A } †	Volume-Rear
C	Switch						US-26 } †	Attach to R1B
R2A	50KΩ	½	PC-8	Q11-123	AG-44-8	AB-31	SU-35	Horiz. Hold
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R2A
R3A	500KΩ	½	PC-3	Q11-133	AG-68-8	AB-59	SU-50	Vert. Hold
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R3A
R4A	2000Ω	½	PC-2	Q11-110	AG-11-8	AB-8	U-6	Vert. Linearity
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R4A
R5A	1 Meg	½	PC-7	Q11-137	AG-61-8	AB-89	SU-54	Vert. Height
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R5A
R5A	500Ω	½	PC-10	Q11-103	AG-5-8	AB-4	R500L	Buzz
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R6A
R7A	50KΩ	½	PC-8	Q11-123	AG-44-8	AB-31	SU-35	Brightness
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R7A
R8A	2 Meg	½	970111-5	Q11-139	AG-83-8	AB-75	SU-56	Focus-Note
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R8A

Note. Some models may use a 500KΩ control in this application.
† UNIVERSAL REPLACEMENT- (MALLORY EXACT DUPLICATE PART NO. UB250S).
* CONCENTRIKIT EQUIVALENT-KIT K-2, BASE ELEMENTS & SHAFTS B17-110 & P1-118 (Panel)
B13-133 & R1-205 (Rear) & SWITCH 75-1.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: GOTHAM PART No.	IRC PART No.	NOTES
R9	3900Ω	½		BTS-3900	
R10	47KΩ	½		BTS-47K	
R11	10KΩ	½			
R12	2200Ω	½		BTS-2200	
R13	4700Ω	½		BTS-4700	
R14	220KΩ	½			
R15	15KΩ	½		BTS-15K	
R16	10KΩ	½			
R17	4700Ω	½		BTS-4700	
R18	100Ω	½		BTS-100	
R19	3900Ω	½		BTS-3900	
R20	47Ω	½		BTS-47	
R21	100Ω	½		BTS-100	
R22	1 Meg	½		BTS-1 Meg	
R23	12KΩ-5%	½			
R24	47Ω	½		BTS-47	
R25	330 Ω	½		BTS-330	
R26	100Ω	½		BTS-100	
R27	12KΩ-5%	½			
R28	180Ω	½		BTS-180	
R29	330Ω	½		BTS-330	
R30	100Ω	½		BTS-100	
R31	1 Meg	½		BTS-1 Meg	
R32	8200Ω	½		BTS-8200	
R33	1 Meg	½		BTS-1 Meg	
R34	1500Ω	1		BTA-1500	
R35	5600Ω	1		BTA-5600	
R36	18KΩ	½		BTS-18K	
R37	100KΩ	½		BTS-100K	
R38	3900Ω	½		BTS-3900	
R39	56KΩ	½		BTS-56K	
R40	100Ω	½		BTS-100	
R41	2200Ω	½		BTS-2200	
R42	330Ω	½			
R43	220KΩ	½		BTS-220K	Note 1
R44	220KΩ	½		BTS-220K	Note 1
R45	150Ω	2			
R46	220Ω	1		BTA-220	
R47	2.2Meg	½		BTS-2.2Meg	
R48	470KΩ	½		BTS-470K	
R49	270KΩ	½		BTS-270K	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: GOTHAM PART No.	IRC PART No.	NOTES
R50	3900Ω	½		BTS-3900	
R51	4700Ω	½		BTS-4700	
R52A	22KΩ	½		BTS-22K	
B	8200Ω	½	♦	BTS-8200	
C	8200Ω	½		BTS-8200	
R53	1000Ω	½		BTS-1000	
R54	100KΩ	½		BTS-100K	
R55	220KΩ	½		BTS-220K	
R56	56KΩ	½		BTS-56K	
R57	10Ω	2			Note 2
R58	2200Ω	½		BTS-2200	
R59	2.2Meg	½		BTS-2.2Meg	
R60	3300	½		BTS-3300	
R61	560Ω	½		BTS-560	
R62	560Ω	½		BTS-560	
R63	1500Ω	½		BTS-1500	
R64	10Ω	2			Note 3
R65	10Ω	2			Note 3
R66	100KΩ	½		BTS-100K	
R67	100KΩ	½		BTS-100K	
R68	4.7Meg	½		BTS-4.7Meg	
R69	470KΩ	½		BTS-470K	
R70	2200Ω	½		BTS-2200	
R71	8200Ω	½		BTS-8200	
R72	120KΩ	½		BTS-120K	
R73	150KΩ	½		BTS-150K	
R74	33KΩ	½		BTS-33K	
R75	270KΩ	½		BTS-270	
R76	68Ω	½			
R77	100Ω	½			
R78	68Ω	½			
R79	100Ω	½			
R80	5600Ω	1		BTA-5600	
R81	10Ω	2			Note 2
R82	3.3Ω	½			
R83	470KΩ	1			
R84	5Ω	5			
R85	*	*			
R86	*	*			
R87	39Ω	2			

Note 1. Some models may use a single 100KΩ resistor in this application.
Note 2. Some models may use a 100KΩ resistor in this application.
Note 3. Some models may use a single 22Ω resistor in this application.
♦ Items R52A, R52B, R52C, C48A, C48B, C48C are combined in one unit.
* Special Temperature compensating resistors.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: GOTHAM PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.	NOTES
T1	719Ω Tap @ 2Ω, 1Ω 14.19Ω	0Ω	TH-3						Horiz. Output Trans.
T2	100Ω	7.5Ω							Vert. Output Trans.
T3A	19Ω		DY-8	DY-9A①	MDF-70①	TY-3 ②	Y-17	21D2	Horiz. Deflection Coils
B	5Ω								Vert. Deflection Coils

① Use original Horiz. deflection coil network if necessary.
② Use original deflection coil network.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: GOTHAM PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T4	2.4KΩ	3.8Ω	192Ω	1Ω		A-3332	A-3025	RO-302 ①	S-1X ①	①Drill one new mtg. hole

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: GOTHAM PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	6"	PM	3.8Ω		ST-108 Mod. P6-X	6A1	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: GOTHAM PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L2	Ant. Coils	0Ω CT	0Ω					
L3	Fil. Choke	0Ω						
L4	RF, Mixer Grid & Osc. Coils	0Ω						
L5	Fil. Choke	0Ω						
L6	1st. Video IF	1Ω						
L7	Fil. Choke	0Ω					4604	1.6 Microhenries
L8	2nd. Video IF	.2Ω			17-1003	TV-102 *	6171A *	
L9	Fil. Choke	0Ω					4604	1.6 Microhenries
L10	3rd. Video IF	.3Ω	.3Ω		17-1063			
L11	4th. Video IF	.4Ω	.4Ω		17-1066			
L12	Series Peaking Coil	8Ω			19-3250 †	TV-185 †	6181 †	260 Microhenries, wound on 18KΩ resistor
L13	Shunt Peaking Coil	9.5Ω			19-1923		4648	375 Microhenries
L14	Series Peaking Coil	9Ω			19-4160	TV-185 †	4644 †	160 Microhenries, wound on 18KΩ resistor
L15	Shunt Peaking Coil	10.5Ω			19-3500		4648	420 Microhenries
L16	Sound IF	2.2Ω	2.2Ω	LK-4		TV-113	6203	
L17	Quadrature Coil	2.8Ω		LK-3				
L18	Horiz. Osc.	50Ω			19-1578	TV-163	6210	

* Enlarge mounting hole.
† Parallel with 18KΩ resistor.

SELENIUM RECTIFIER

ITEM No.	RATING: CURRENT	REPLACEMENT DATA: GOTHAM PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.
M1	.355ADC		NM5	581	1022	68450	450

MISCELLANEOUS

ITEM No.	PART NAME	GOTHAM PART No.	NOTES
M2	RF Tuner		
M3	Crystal Diode		IN64 (Video Det)
M4	Centering Magnet		
M5	Ion Trap Magnet		
B2	Trimmer		Horiz. Drive (25-280MMF)

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D.C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA: GOTHAM PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L1	.280ADC	10Ω	.46 Hy.		C-2328			

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COLORADO

TROUBLE SHOOTING AIDS (CONT.)

VIDEO

SOUND BARS

Check adjustment of A5 and A6. Check local oscillator adjustment and video IF alignment.

POOR RESOLUTION

Check video alignment. If alignment cannot be brought within tolerance, substitute video IF tubes and check circuit components.

SMEAR

Check components of V6, particularly the peaking coils.

WIDE BLACK BAR

Check tuner, Video IF and Video amplifier tubes for filament to cathode leakage.

POOR CONTRAST

Check by substitution, V1, V2, V3, V4, V5 and V6. Substitute the 1N64 video detector . Check picture tube.

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AUDIO

WEAK OR NO SOUND

Substitute V7 and V8. Check L16 and components associated with V7 and V8.

BUZZ

Adjust buzz control. If this fails to eliminate the trouble. Check R40.

DISTORTED

Check adjustment of the gated beam detector. Check components of the audio output tube.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution V13, V14, V15, V16 , V17 and V18.

Check waveform W12;

If Unsatisfactory	If Satisfactory
Check components of horizontal osc. Check coupling and wave-shaping components between V13 and the horiz. output stages.	Check T1, T3A and associated components. Check damper circuit.

WEAK HIGH VOLTAGE

Check by substitution, V15, V16, V17 and V19. Follow procedure outlined under LOSS OF HIGH VOLTAGE.

BLOOMING

Follow procedure outlined under WEAK HIGH VOLTAGE. Check the selenium rectifier

POWER

SMALL RASTER, WEAK SOUND

Check B plus circuit for shorts. If no shorts are present and B plus is low, substitute selenium receiver .

DIM RASTER

Follow procedure outlined under SMALL RASTER, WEAK SOUND and check picture.

GENERAL

SET DEAD

Check tubes for open filament in string not lighted. Check selenium rectifier.

RASTER BUT NO SOUND OR PICTURE

Check by substitution, V1, V2 and V6. Check associated components.

SNOWY PICTURE

Substitute V1. Check tuner and IF strip.

INTERMITTENT STREAKS:

Check high voltage circuit for corona arcing and leakage.

The Trouble-Shooting photographs shown above are made with permission of transmitting station WFBM-TV and in no way reflect the quality of the transmitted picture. Similarly, symptoms shown are assumed and are not indicative of the quality and workmanship of this receiving equipment.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF Tuner Oscillator Circuit may be accomplished by removing the channel selector and fine tuning knobs.

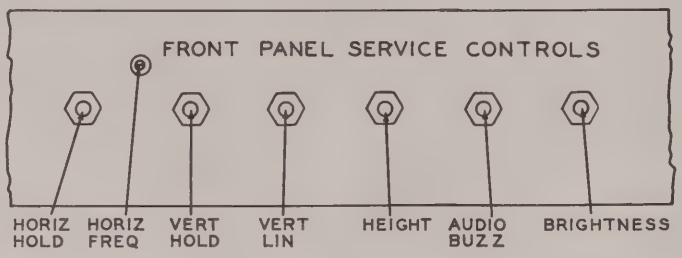
PICTURE TUBE SAFETY GLASS CLEANING

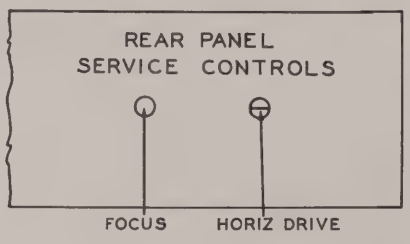
For picture tube safety glass cleaning, it is necessary to remove chassis. (See disassembly instructions).

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION





HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the Horiz. Oscillator Circuit can be made from front panel. (Set horiz. hold control at center of range and adjust AFC slug, L18, to sync the picture horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate Sound IF Detector buzz, adjust buzz control for maximum audio with minimum buzz.

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

DISASSEMBLY INSTRUCTIONS

1. Remove 4 push on type control knobs from front panel.
2. Remove 5 wood screws. Remove rear cover.
3. Disconnect built-in antenna and speaker plug.
4. Remove 2 wood screws. Remove antenna bracket.
5. Remove 4 chassis bolts. Remove chassis.
6. Remove 4 speaker nuts. Remove speaker.

PROPERTY OF
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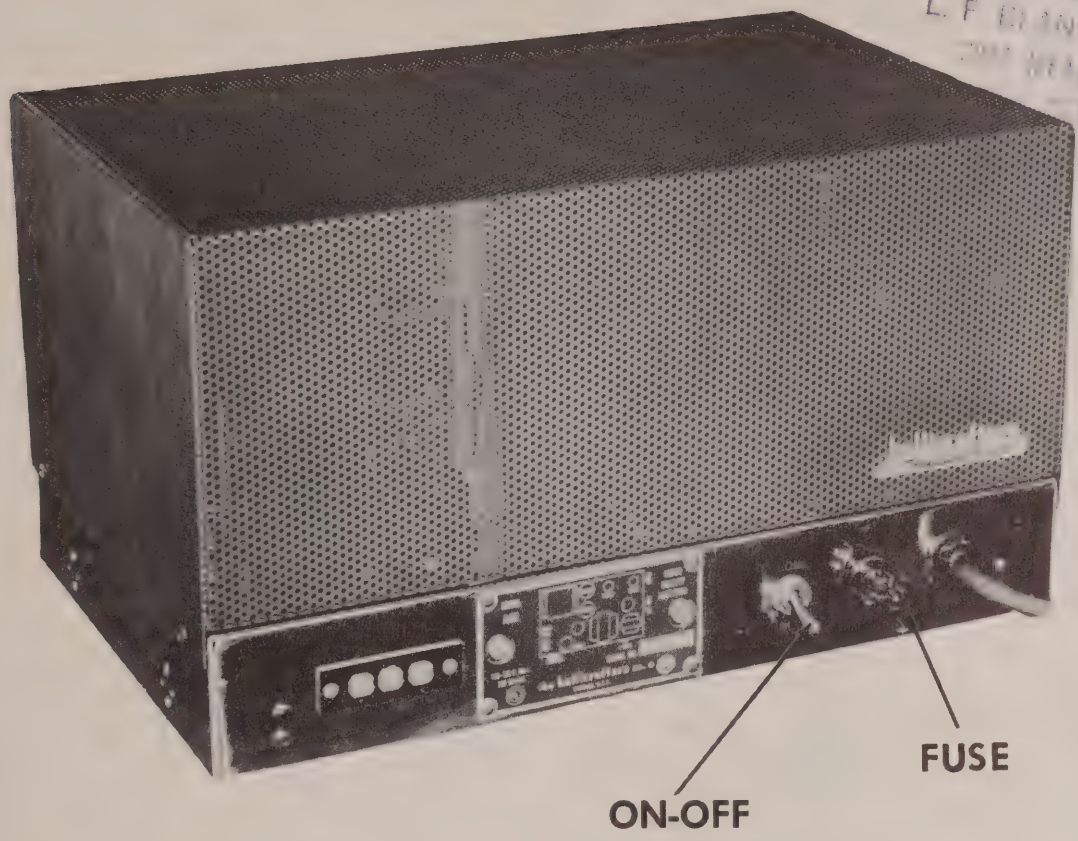
HALLICRAFTERS
MODEL A-84 (Run 1)



HALLICRAFTERS
MODEL A-84 (Run 1)

TRADE NAME	Hallicrafters Model A-84 (Run 1)
MANUFACTURER	Hallicrafters Co., 4401 W. 5th. Ave., Chicago 24, Ill.
TYPE SET	AC Operated 10 Watt Audio Amplifier
TUBES (Five)	Types 12AU7 AF Amp.-Phase Inv., 12AU7 Driver, (2) KT-66 Audio Output, 5V4G Rectifier
POWER SUPPLY	110-120 Volts AC- 50/60 Cycles RATING 1.17 Amp. @ 117 Volts AC

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1953 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: Hallicrafters PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	AF Amplifier-Phase Inverter	90X12AU7	12AU7	9A	
V2	Driver	90X12AU7	12AU7	9A	
V3	Audio Output	90XKT-66	KT-66	7S	
V4	Audio Output	90XKT-66	KT-66	7S	
V5	Rectifier	90X5V4G	5V4G	5L	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Hallicrafters PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1	4	600	46B206	GL600/4		KR604		HS691	AP-46	
C2A	■40	500	45B222	AFH2-72		BO53		FP288		
B	▲40	500		PRS450/8-8		BRD8D45		TCD71		
C	8	400								
D	▲8	400								
C3	100	50		PRS50/100		BRH501		TC3501	TVA-1310	Note 1
C4	10		47A299							
C5	.5	600	46B203	689ZX-.5		TVC6P5		OT116	PX-56	
C6	.5	600	46B203	689ZX-.5		TVC6P5		OT116	PX-56	
C7	.1	600	46C202	P688-1		PTE6P1		PT601	6TM-P1	
C8	.1	600	46C202	P688-1		PTE6P1		PT601	6TM-P1	

Note 1. Some Models may use 10MFD 50 volts capacitor in this application (Part #45B211).

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Hallicrafters PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	100Ω	2	25B1018	W-100	A43-100	VK-121	R100L	Bral-Wire Wound
B	Shaft		Not Req.	Not Req.	FKS-1/4	Not Req.	Not Req.	Attach to R1A
R2A	100Ω	2	25B1018	W-100	A43-100	VK-121	R100L	Balance-Wire Wound
B	Shaft		Not Req.	Not Req.	FKS-1/4	Not Req.	Not Req.	Attach to R2A

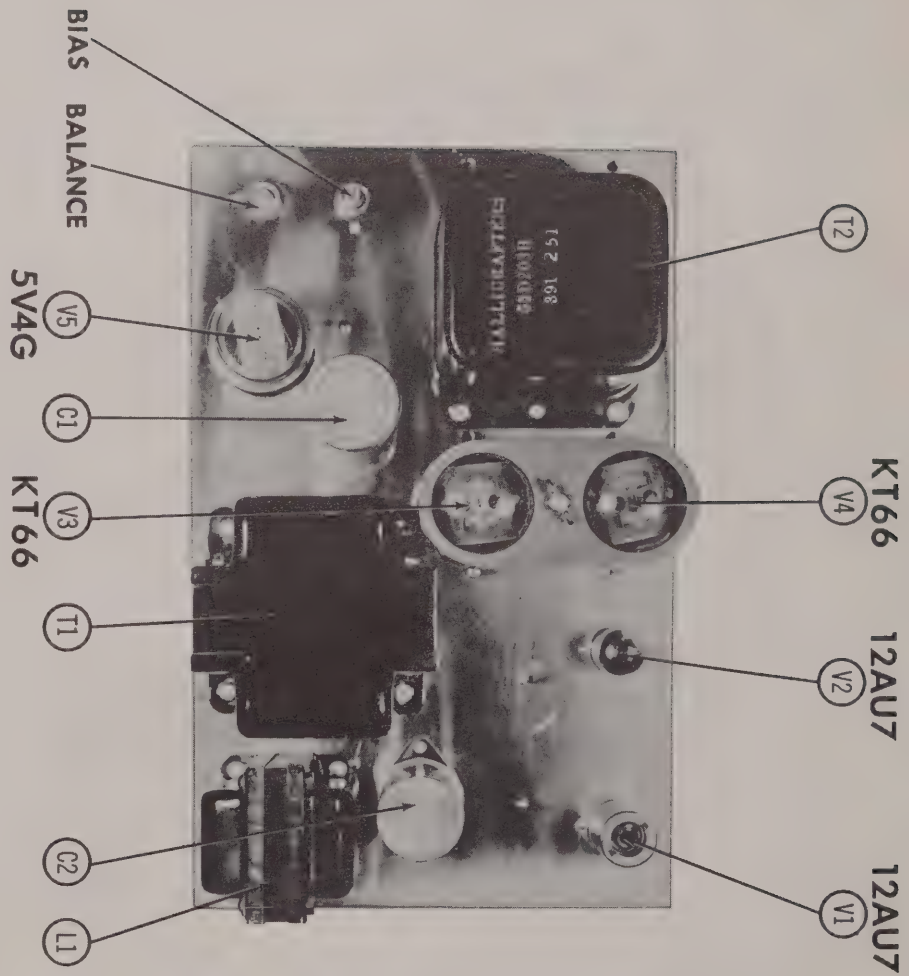
RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: Hallicrafters PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R3	470KΩ	½	23X20X474K	BTS-470K	
R4	10KΩ	½	23X20X103K	BTS-10K	
R5	470Ω	1	23X30X471K	BTA-470	
R6	47KΩ	2	23X40X473K	BTB-47K	
V7	4700Ω	½	23X20X472K	BTS-4700	
R8	22KΩ	1	23B088	BTA-22K	Note 3
R9	22KΩ	1	23B088	BTA-22K	Note 3
R10	470KΩ	½	23X20X474K	BTS-470K	
R11	390Ω	1	23X30X391K	BTA-390	
R12	47KΩ	2	23B087		Note 1
R13	470KΩ	½	23X20X474K	BTS-470K	
R14	47KΩ	2	23B087		Note 1
R15	100Ω	1	23X30X101K	BTA-100	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: Hallicrafters PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R16	100Ω	1	23X30X101K	BTA-100	
R17	100KΩ	½	23B086		Note 2
R18	1000Ω	½	23X20X102K	BTS-1000	
R19	100Ω	½	23X20X101K		
R20	400Ω-2%	5	24BF401B		
R21	100KΩ	½	23B086		Note 2
R22	1000Ω	½	23X20X102K	BTS-1000	
R23	100Ω	½	23X20X101K		
R24	400Ω-2%	5	23BF401B		
R25	22KΩ	1	23X30X223K	BTA-22K	
R26	33KΩ	1	23X30X333K	BTA-33K	
R27	100KΩ	1	23X30X104K	BTA-100K	
R28	10KΩ	1	23X30X103K	BTA-10K	

Note 1. R12 & R14 are matched within 2% tolerance.
Note 2. R17 & R21 are matched within 2% tolerance
Note 3. R8 & R9 are matched within 2% tolerance

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	Hallicrafters PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC @ 1.17A ①	870VCT .137ADC	5VAC @ 3A	6.3VCT @ 3A	52D263	P-6143 ②			

① Primary winding has taps for 125V and 105V lines.
② Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		Hallicrafters PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T2	9.5KΩ CT	16Ωtap @8Ω	408Ω CT	.8Ω tap @ .4Ω	55D203	A-8054 ①				

① Drill new mounting holes.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	Hallicrafters PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L1	.137ADC	167Ω	6.6 Hy.	56C152	C-1421		R-7150 ①	
L2	.025ADC	788Ω	23.6 Hy.	56C151				

① Drill new mounting holes.

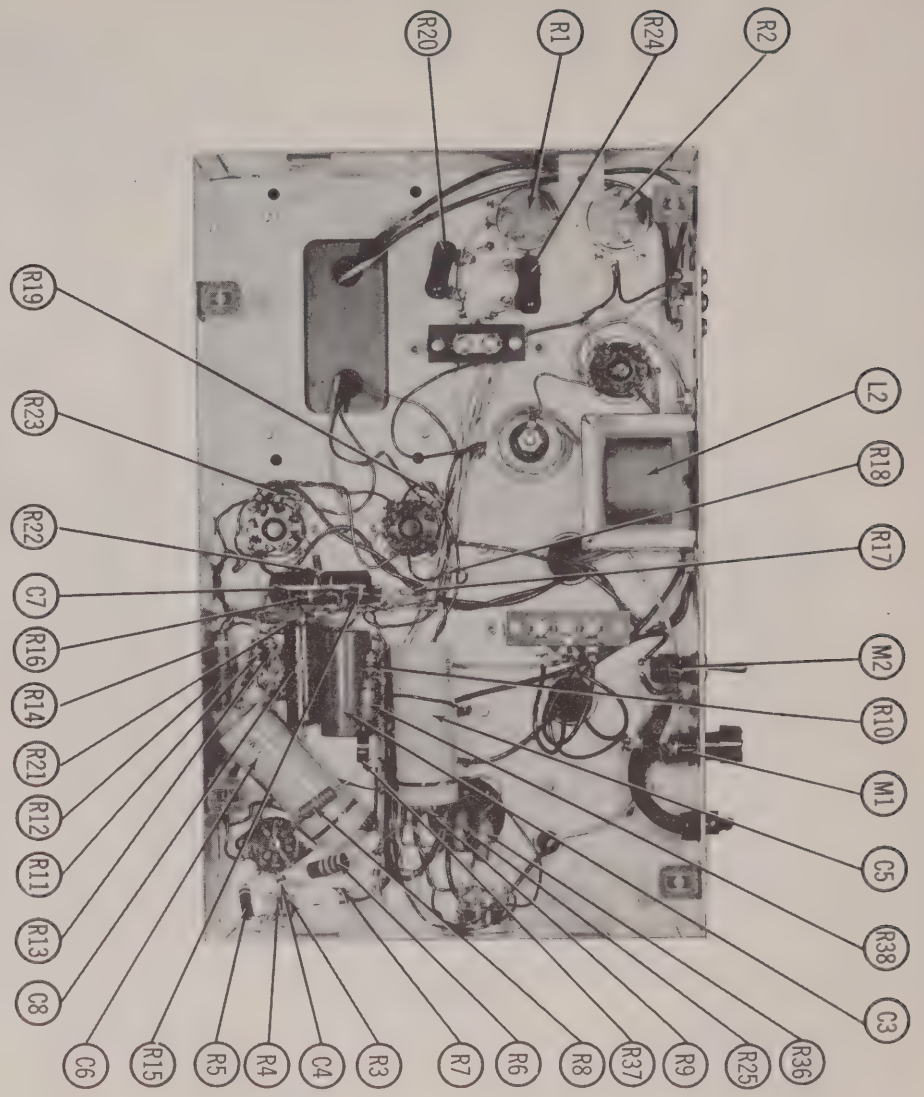
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Hallicrafters PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	3A @ 250V	39A337	6A451	312003 (3AG-3A-250V)	342001	AGC-3	HKP

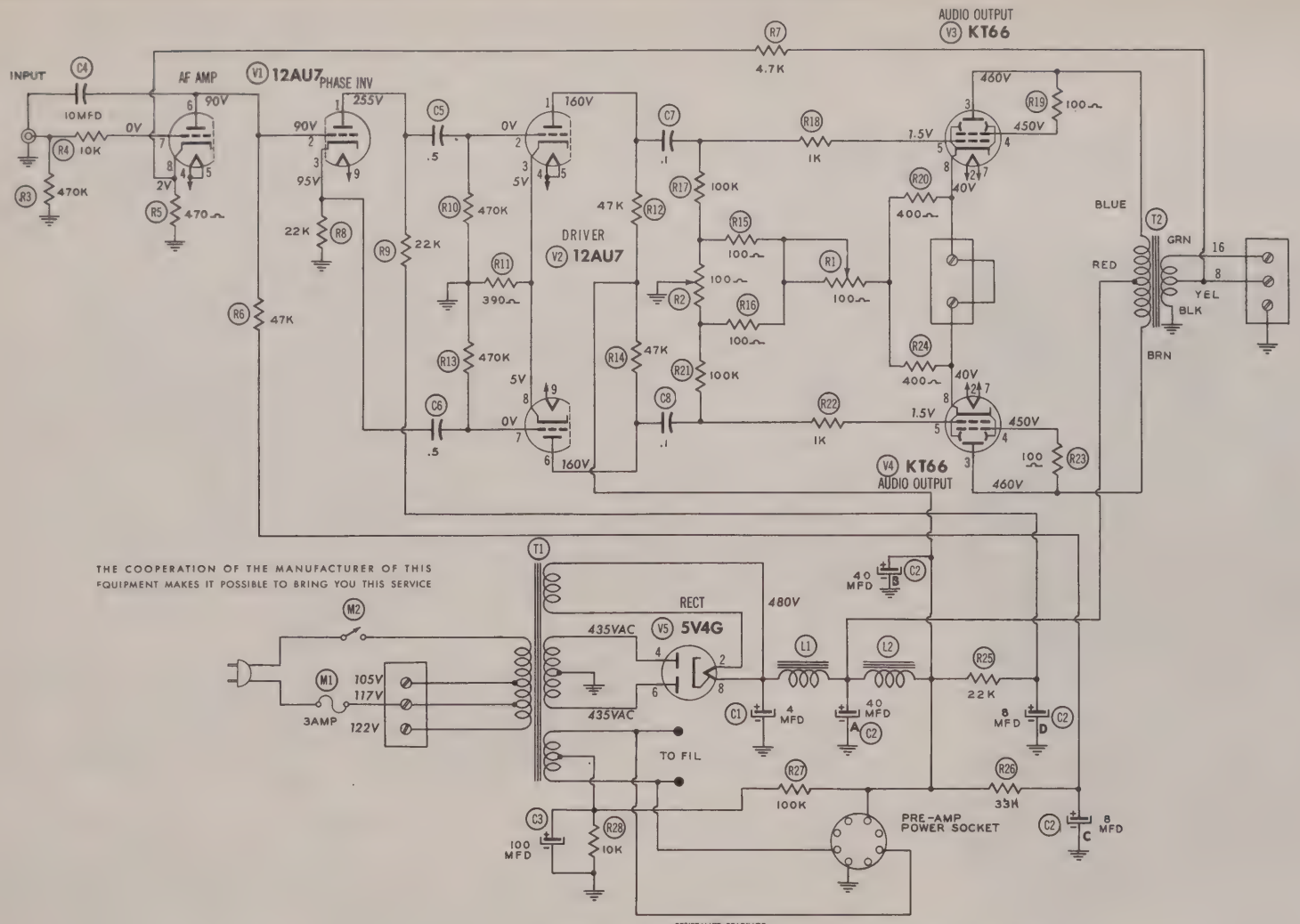
MISCELLANEOUS

ITEM No.	PART NAME	Hallicrafters PART No.	NOTES
M2	Switch	60A138	Power On/Off

CHASSIS—BOTTOM VIEW



HALLICRAFTERS MODEL A-84 (Run 1)



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AU7	†45KΩ	†81KΩ	22KΩ	9KΩ	9KΩ	†81KΩ	480KΩ	470Ω	9KΩ
V 2	12AU7	†48KΩ	470KΩ	390Ω •	9KΩ	9KΩ	†48KΩ	470KΩ	390Ω	9KΩ
V 3	KT-66	INF	9KΩ	†370Ω	†470Ω	100KΩ	INF	9KΩ	280Ω	
V 4	KT-66	INF	9KΩ	†370Ω	†470Ω	100KΩ	INF	9KΩ	280Ω	
V 5	5V4G	INF	120KΩ	INF	80Ω	INF	72Ω	INF	120KΩ	

• 6.3VAC ACROSS FILAMENTS.
† MEASURED FROM PIN 8 OF V5.

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

MASCO
MODEL WF-1A

PROPERTY OF
L. F. BLANKENSHIP

MASCO
MODEL WF-1A

MASCO
MODEL WF-1A

TRADE NAME	Masco Model WF-1A (Wireless Fone)
MANUFACTURER	Mark-Simpson Mfg. Co., Inc., 32-28 49th. St., Long Island City 3, New York.
TYPE SET	AC-DC Operated Wireless Intercommunication Unit
TUBES (Four)	Types 50C5 RF Osc.-Det., 12AU6 AF Amp., Squelch Control, 12AU6 AF Amp., 50C5 Audio Output-Modulator
POWER SUPPLY	110-120 Volts AC/DC RATING .21 Amp @ 117 Volts AC
TUNING RANGE—BROADCAST	200KC, 225KC or 250KC

WIRELESS FONE units are factory aligned at 200KC. In the event that the oscillator coil is replaced or if it is desired to operate several systems side by side without interference, realignment will be necessary. Since these units are capable of receiving a wide band of frequencies it is recommended that only the frequencies 200KC, 225KC and 250KC be used, to prevent interference among adjacent systems.'

Connect signal generator through a .05MFD capacitor to the "ground" lug on the power cord. Connect the low side of generator to chassis. Set signal generator to 200KC (or other selected frequency within 200 to 250KC range) and modulate 40% at 400~.

Turn WIRELESS FONE "on" and set switch to "Listen" position.

Set line selector switch to " 3 wire" position.

Adjust coil slug "A1 " for maximum 400~ audio signal in speaker.

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PARTS LIST AND DESCRIPTIONS

MASCO
WF-1A (Wireless Fone)

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	INSTALLATION NOTES
		MASCO PART No.	STANDARD REPLACEMENT		
V1	RF Oscillator-Detector	50C5	50C5	7CV	
V2	AF Amplifier-Squelch Control	12AU6	12AU6	7BK	
V3	AF Amplifier	12AU6	12AU6	7BK	
V4	Audio Output-Modulator	50C5	50C5	7CV	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	MASCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	40	150		PRS150/50-		EDL44215		3N532	TVA-3448	Red
B	40	150		30-20						Red
C	20	150								Green
C2	50	50		PRS50/50		BR505		TC-39	TVA-1308	
C3	.001	600		P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C4	.002	600		P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C5	220			BPD-00022	D6-222	5W5T25	GP2K-221	UC-5322	5GA-T22	
C6	.05	600		P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C7	.1	600		P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C8	.001	600		P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C9	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C10	100			S1100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C11	100	500		1468-0001	D6-101	5W5T1	GP1K-101	MC235	1FM-31	
C12	175	500								
C13	.1	600		P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C14	.1	600		P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C15	.22	400		489ZX-25		PJ4P25		PT4025	4TM-P22	
C16	.1	600		P688-1		PTE6P1		PT601	6TM-P1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MASCO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	BA012-246	Q13-133	AG-60-Z	B-60-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A
R2A	50Ω	2			A43-50		C50P*	Squelch-Wire Wound
B	Shaft				FKS-1/4			Attach to R2A

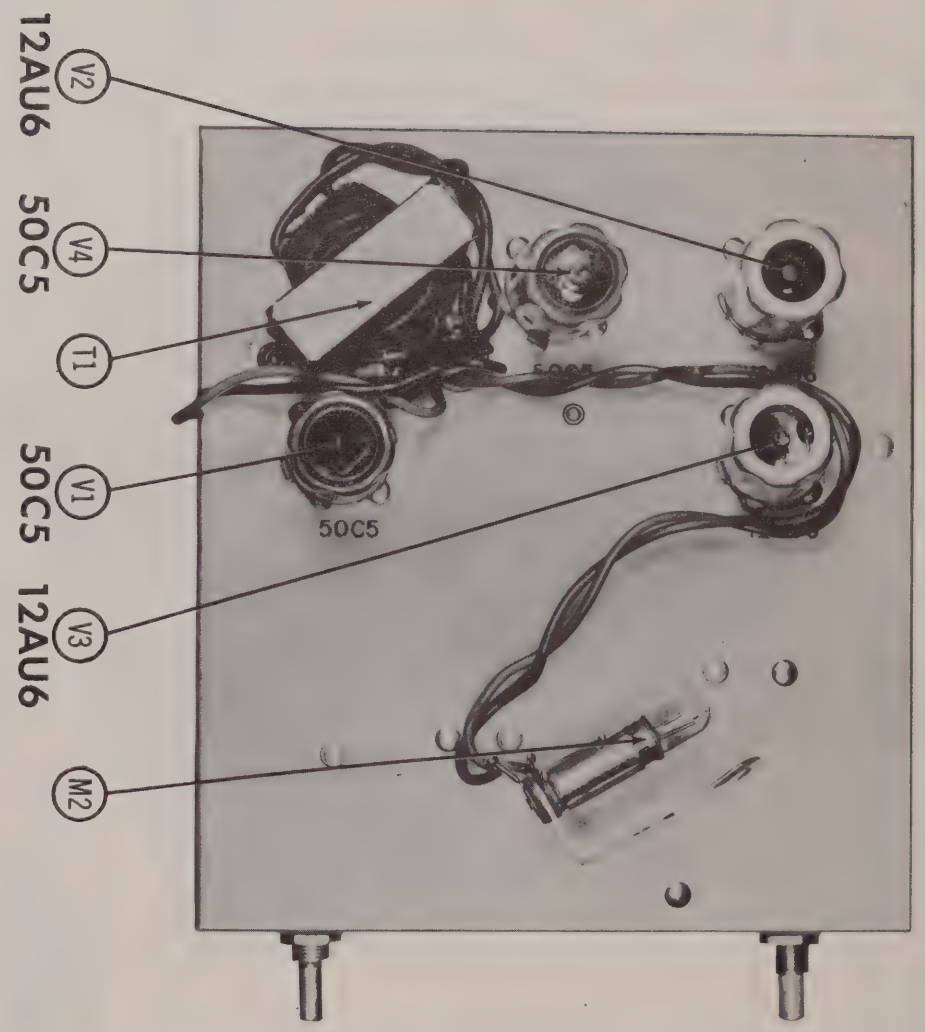
* USE MALLORY WASHERS (PART NO. 203 & 212).

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MASCO PART No.	IRC PART No.	
R3	1 Meg	½		BTS-1 Meg	
R4	27KΩ	½		BTS-27K	
R5	2200Ω	½		BTS-2200	
R6	27KΩ	½		BTS-27K	
R7	10Meg	½		BTS-10Meg	
R8	470KΩ	½		BTS-470K	
R9	470KΩ	½		BTS-470K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MASCO PART No.	IRC PART No.	
R10	270KΩ	½		BTS-270K	
R11	470KΩ	½		BTS-470K	
R12	100Ω	½		BTS-100	
R13	82Ω	1			
R14	100KΩ	½		BTS-100K	
R15	470Ω	2		BTB-470	
R16	2200Ω	½		BTS-2200	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		MASCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	1.66KΩ	14.7Ω	141Ω	1.18Ω	13-0-2C					

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	MASCO PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	14.7Ω	4BM-40			

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	MASCO PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Osc. Coil	45Ω	45Ω					Coupling windings=0Ω

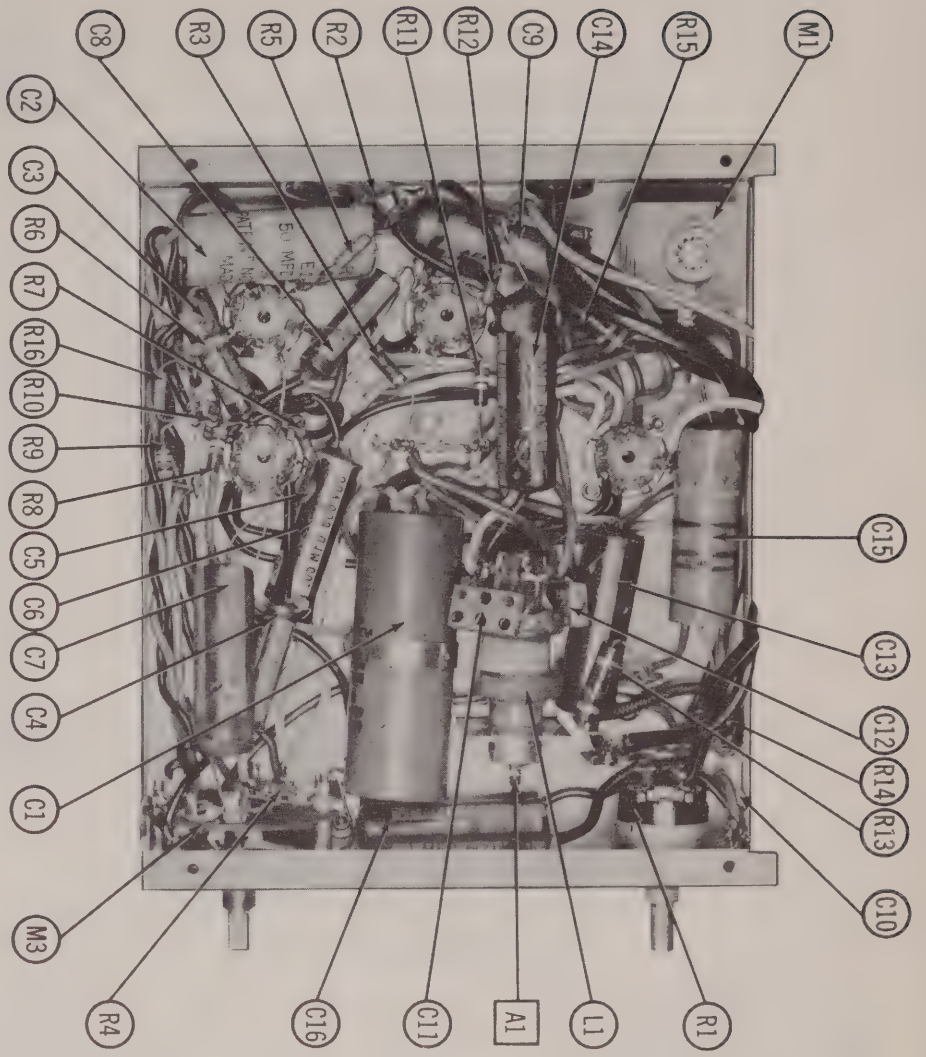
SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT	MASCO PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.
M1	.055A		NC5	5M1	1101A	6S100	100

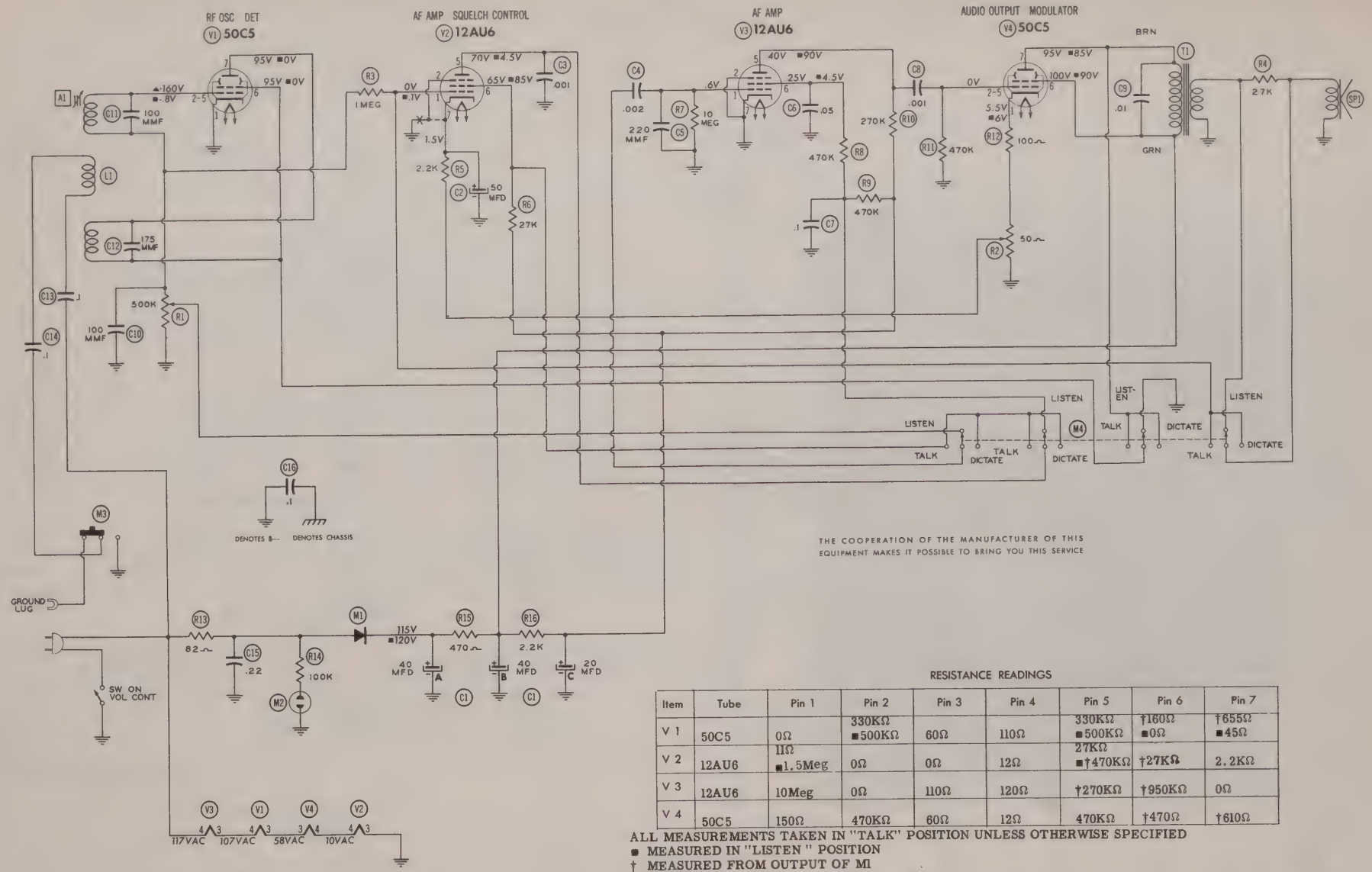
MISCELLANEOUS

ITEM No.	PART NAME	MASCO PART No.	NOTES
M2	Neon Light		Type NE51
M3	Switch		Line Selector
M4	Switch		Talk-Listen Selector

CHASSIS—BOTTOM VIEW



MASCO WF-1A (Wireless Fone)



THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	50C5	0Ω	330KΩ ■500KΩ	60Ω	110Ω	330KΩ ■500KΩ	†160Ω ■0Ω	†655Ω ■45Ω
V 2	12AU6	11Ω ■1.5Meg	0Ω	0Ω	12Ω	27KΩ ■†470KΩ	†27KΩ	2.2KΩ
V 3	12AU6	10Meg	0Ω	110Ω	120Ω	†270KΩ	†950KΩ	0Ω
V 4	50C5	150Ω	470KΩ	60Ω	12Ω	470KΩ	†470Ω	†610Ω

ALL MEASUREMENTS TAKEN IN "TALK" POSITION UNLESS OTHERWISE SPECIFIED
■ MEASURED IN "LISTEN " POSITION
† MEASURED FROM OUTPUT OF M1
▲ TAKEN WITH VACUUM TUBE VOLTMETER
ALL MEASUREMENTS TAKEN WITH "SQUELCH" CONTROL IN MINIMUM (EXTREME CLOCKWISE) POSITION

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PROPERTY OF
L. F. D. SHOP
3624 MEADE ST.
DENVER, COLORADO

RCA VICTOR
MODELS 2-XF-931, 2, 3, 4 (Ch. RC1121A)

RCA VICTOR
MODELS 2-XF-931, 2, 3, 4 (Ch. RC1121A)

TRADE NAME	RCA Victor Models 2-XF-931, 2-SF-932, 2-XF-933, 2-XF-934, 2-XF-935 (Ch. RC1121A)
MANUFACTURER	RCA Victor Div., Radio Corp. of America, Camden, N.J.
TYPE SET	AC Operated AM-FM Superheterodyne Receiver
TUBES (Eight)	Types 6BJ6 FM AM RF Amp., 19X8 FM AM Conv., 12BA6 1st. FM AM IF Amp., 12AU6 2nd. FM IF Amp., 12AU6 3rd. FM IF Amp., 12AL5 discriminator, 12AV6 Det.-AVC-AF Amp., 35C5 Audio Output
POWER SUPPLY	110-120 Volts AC-50/60 Cycles RATING .30 Amp. @ 117 Volts AC
TUNING RANGE- BROADCAST	540-1600KC FM 88-108MC

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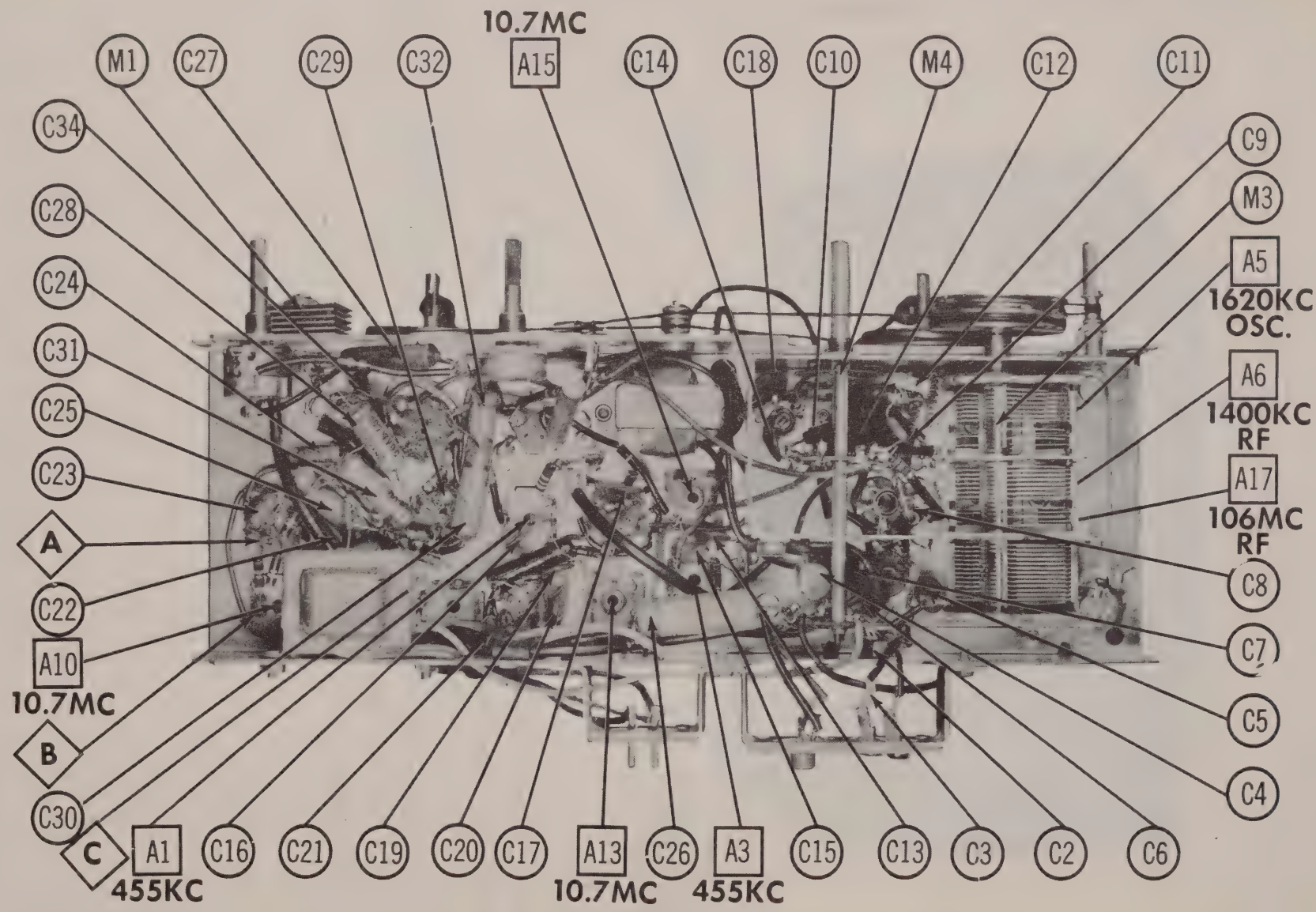
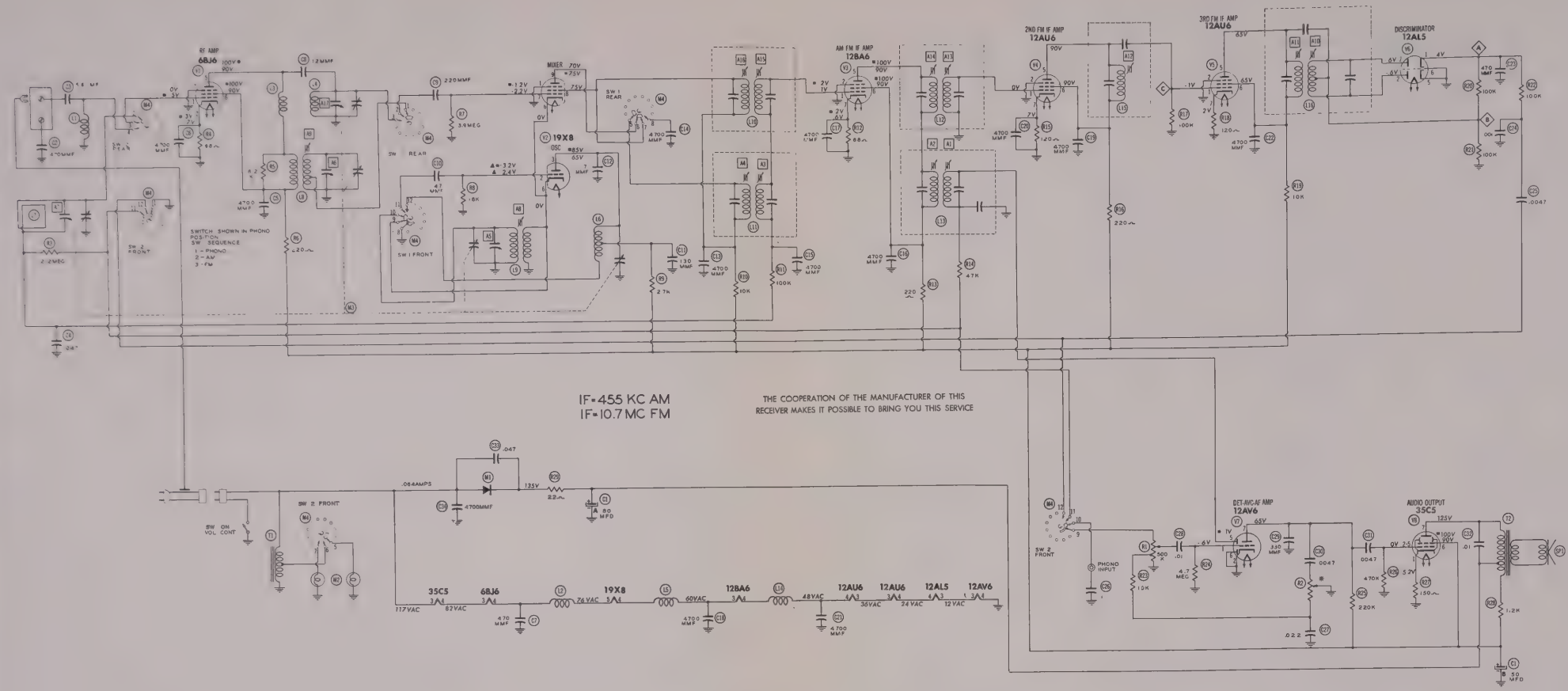


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



IF=455 KC AM
IF=10.7 MC FM

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BJ6	0Ω ■2.7Meg	68Ω	70Ω	65Ω	†1.4KΩ	†1.4KΩ	0Ω		
V 2	19X8	0Ω	18KΩ	†3.9KΩ	65Ω	53Ω	0Ω ■2Ω	3.9Meg	†11.2KΩ	11.2KΩ
V 3	12BA6	2.3Meg ■2.8Meg	0Ω	53Ω	45Ω	†1.4KΩ	†1.4KΩ	68Ω		
V 4	12AU6	1.2Ω	0Ω	36Ω	45Ω	†1.4KΩ	†1.4KΩ	120Ω		
V 5	12AU7	100KΩ	0Ω	36Ω	24Ω	†11KΩ	†11KΩ	120Ω		
V 6	12AL5	200KΩ	100KΩ	12Ω	24Ω	0Ω	0Ω	100KΩ		
V 7	12AV6	4.7Meg	0Ω	12Ω	0Ω	■500KΩ	0Ω	†220KΩ		
V 8	35C5	150Ω	470KΩ	80Ω	70Ω	470KΩ	†1.2KΩ	†282Ω		

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHER WISE SPECIFIED.
■ MEASURED IN "AM" POSITION .
▲ TAKEN WITH VACUUM TUBE VOLTMETER .
† MEASURED FROM OUTPUT OF M1 .
NOTE . FILAMENT RESISTANCE MEASUREMENTS INCLUDE PARALLEL EFFECT OF T1.

✱ SEE PARTS LIST FOR VALUE AND APPLICATION.

209-9

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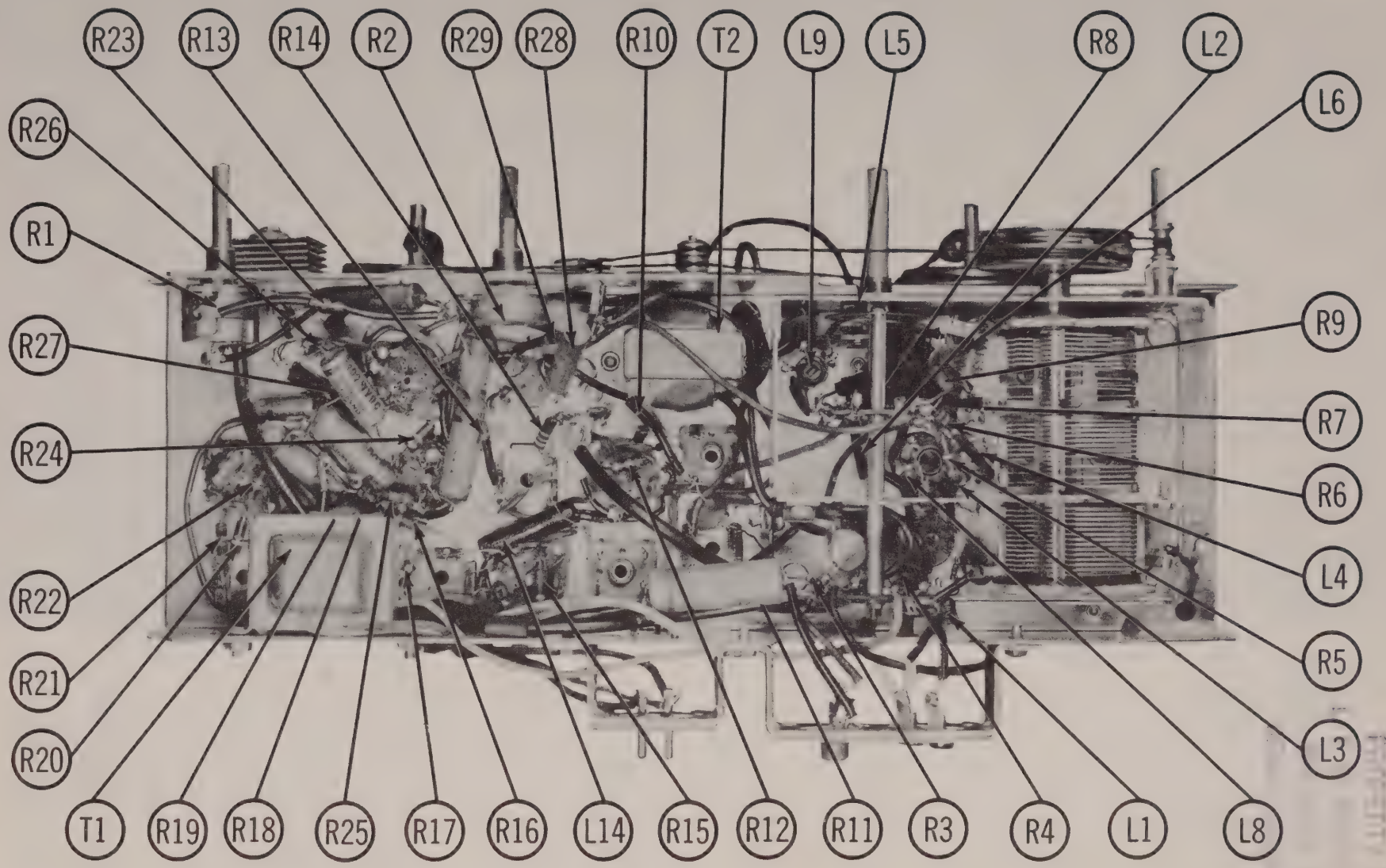


CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning gang fully closed and set both pointers at the last reference mark at low frequency end of their dial.

AM ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Set tone control to mid-position.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin 1 (grid) of 12BA6 (V3). Low side to chassis.	455KC (400∿Mod)	AM	Quiet point near high frequency end.	Across voice coil.	A1, A2	Adjust for maximum output.
2.	"	High side to center top of AM-RF coil secondary (the short lead to wafer switch) Low side to chassis.	"	"	"	"	A3, A4	"
3.		Loop	1620KC	"	1620KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver . Adjust for maximum output.
4.		"	1400KC	"	1400KC	"	A6, A7	"
5.		"	600KC	"	600KC	"	A8, A9	Connect 10KΩ resistor across AM-RF stator to chassis. Adjust A8 for maximum while rocking tuning gang. Remove the 10KΩ resistor and adjust A9 for maximum output.
6.	Repeat steps 4 and 5 until no increase in output is noted.							

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Set volume control to minimum and tone control to mid-position.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	.01 MFD	High side to point (C) Low side to chassis.	10.7MC (Unmod)	FM	Quiet point near low frequency end of dial.	DC probe to point (A) Common to chassis.	A10	Adjust for zero reading. A positive reading will be obtained on either side of the correct setting.
8.	"	"	"	"	"	DC probe to point (B) Common to chassis.	A11	Adjust for maximum deflection.
9.	"	High side to pin 1 (grid) of 12AU6 (V4). Low side to chassis.	"	"	"	DC probe through 220KΩ to point (C) Common to chassis.	A12	Use short, shielded leads when connecting VTVM. Adjust A12 for maximum deflection. Attenuate generator to maintain 1 Volt at VTVM.
10.	"	High side to pin 1 (grid) of 12BA6 (V3). Low side to chassis.	"	"	"	"	A13, A14	Adjust for maximum deflection. If necessary for best peaking, shunt the winding not being peaked with a 680Ω resistor.
11.	"	High side to stator of FM RF section of tuning gang. Low side to chassis.	"	"	"	"	A15, A16	"

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Set volume control to minimum and tone control to mid-position.
Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
7.	.01MFD	High side to point (C) Low side to chassis.	10.7MC (450KC Swp)	FM	Quiet point near low frequency end of dial.	Vert. amp to point (A) Low side to chassis.	A10, A11	Adjust A10 so that 10.7MC occurs at center of crossover lines as in Fig. 1. Adjust A11 for maximum amplitude, straightness and symmetry of crossover lines.
8.	"	High side to pin 1 (grid) of 12AU6 (V4). Low side to chassis.	"	"	"	Vert. amp thru 220KΩ to point (C) Low side to chassis.	A12	Adjust for curve of maximum amplitude and symmetry as in Fig. 2.
9.	"	High side to pin 1 (grid) of 12BA6 (V3). Low side to chassis.	"	"	"	"	A13, A14	"
10.	"	High side to stator of FM RF section of tuning gang. Low side to chassis.	"	"	"	"	A15, A16	"
	Contunue alignment with step 12.							

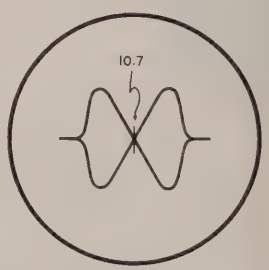


FIG. 1

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
12.	270Ω Carbon Resistors	To FM antenna terminals with 270Ω in each lead.	90MC	FM	90MC	DC probe thru 220KΩ to point (C) Common to chassis.	L6	Compress or expand L6 for maximum deflection.
13.	"	"	106MC	"	106MC	" "	A17	Adjust for maximum deflection.
14.	"	"	90MC	"	90MC	"	L4	Compress or expand L4 for maximum deflection.
15.	"	"	100MC	"	100MC	"	L1	Compress or expand L1 for maximum deflection.

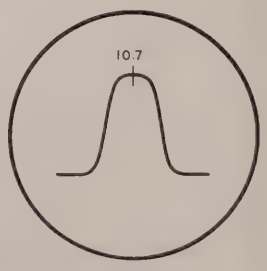


FIG. 1

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: RCA Victor PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1	FM AM RF Amp.	6BJ6	6BJ6	7CM	
V2	FM AM Converter	19X8	19X8	9AK	
V3	1st. FM AM IF Amp.	12BA6	12BA6	7BK	
V4	2nd. FM IF Amp.	12AU6	12AU6	7BK	
V5	3rd. FM IF Amp.	12AU6	12AU6	7BK	
V6	Discriminator	12AL5	12AL5	6BT	
V7	Det.-AVC-AF Amp.	12AV6	12AV6	7BT	
V8	Audio Output	35C5	35C5	7CV	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

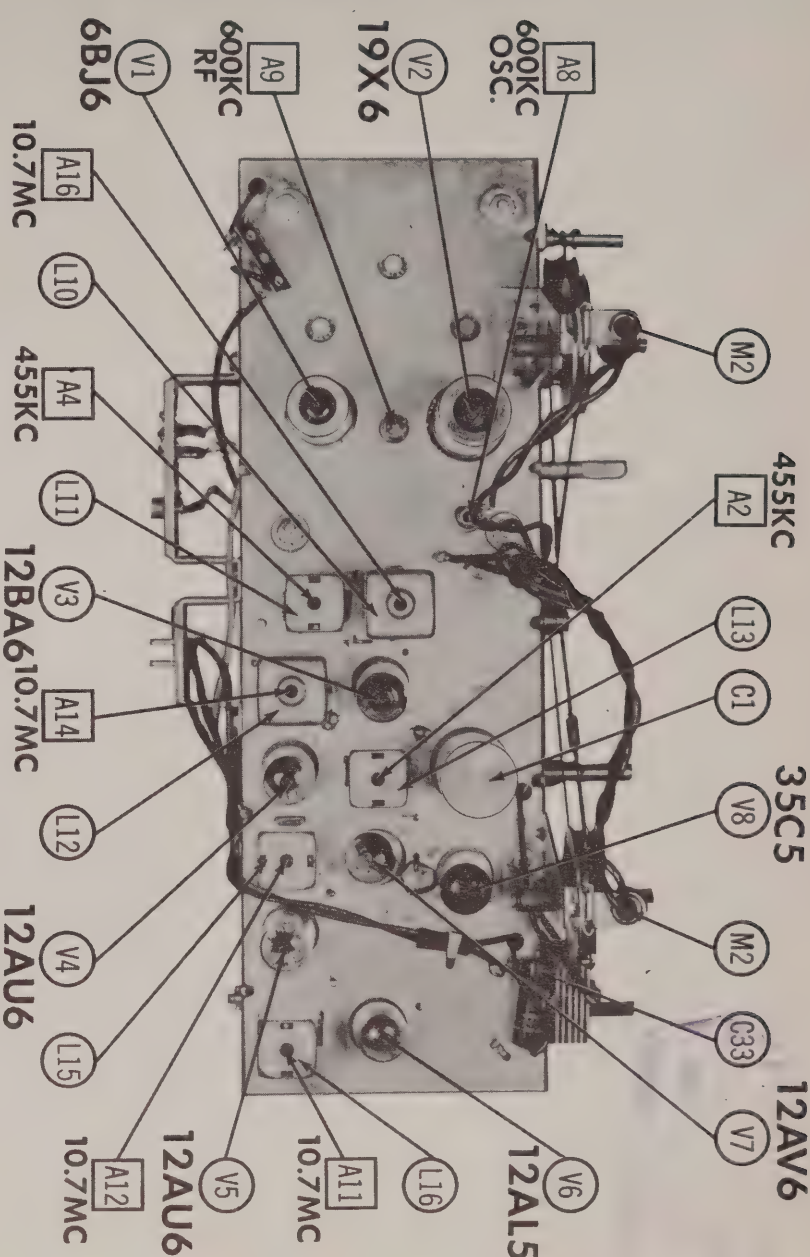
ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	■80	150	73520	AFH2-19		XB004		FP216	TVL-2442	
B	▲50	150								
C2	470	500	39644	1469-0005	D6-471	5W5T5	GP2K-471	MC245	1FM-35	
C3	5.6		70997				NP0K-5R6			
C4	.047	200	73558	P288-047	DF-503	PJ2S5		PT4147	2TM-S47	
C5	4700		73473	BPD-0047	MD-502	TM5D5	811-005	DC-525	5HK-D47	
C6	4700		73473	BPD-0047	MD-502	TM5D5	811-005	DC-525	5HK-D47	
C7	470	500	76992	1468-0005	D6-471	5W5T5	GP2K-471	MC245	1FM-35	
C8	12		33380		TCZ-12		NP0K-120			
C9	220	500	39636	1468-00025	D6-221	5W5T25	GP2K-221	MC240	1FM-325	
C10	47		77531	SI47NP0	TCZ-47		NP0L-470		5TCC-Q47	
C11	130		77532		TCN-130		N750L-131			
C12	7		77530				N080-331-070			
C13	4700		73473	BPD-0047	MD-502	TM5D5	811-005	DC-525	5HK-D47	
C14	4700		73473	BPD-0047	MD-502	TM5D5	811-005	DC-525	5HK-D47	
C15	4700		73473	BPD-0047	MD-502	TM5D5	811-005	DC-525	5HK-D47	
C16	4700		73473	BPD-0047	MD-502	TM5D5	811-005	DC-525	5HK-D47	
C17	4700		73473	BPD-0047	MD-502	TM5D5	811-005	DC-525	5HK-D47	
C18	4700		73473	BPD-0047	MD-502	TM5D5	811-005	DC-525	5HK-D47	
C19	4700		73473	BPD-0047	MD-502	TM5D5	811-005	DC-525	5HK-D47	
C20	4700		73473	BPD-0047	MD-502	TM5D5	811-005	DC-525	5HK-D47	
C21	4700		73473	BPD-0047	MD-502	TM5D5	811-005	DC-525	5HK-D47	
C22	4700		73473	BPD-0047	MD-502	TM5D5	811-005	DC-525	5HK-D47	
C23	470	500	76992	1468-0005	D6-471	5W5T5	GP2K-471	MC245	1FM-35	
C24	.001	200	77533	P285-001	D6-102	PTE6D1	GP2L-102	PT621	68P1	
C25	.0047	400	73920	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C26	.1	400	73551	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C27	.022	200	73562	P488-022	DD-203	PTE4S22		PT4122	4TM-S22	
C28	.01	400	73561	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C29	330		75792	SI330	D6-331		GP2K-331	UC-5333	5GA-T33	
C30	.0047	400	73920	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C31	.0047	400	73920	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C32	.01	600	73594	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C33	.047	400	75071	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C34	4700		73473	BPD-0047	MD-502	TM5D5	811-005	DC-525	5HK-D47	

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RCA Victor PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	77515	Q13-133X	AT-78	BT-66-S	UT-427	Volume Tap@ 100KΩ
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SW-A	Not Req.	US-26	Attach to R1A
R2A	*	½	77516	Q11-143	AG-85-S	B-98	U-82	Tone
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A

* This control may vary from 2 Meg (minimum) to 50 Meg.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA RCA Victor PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R3	2.2Meg	1/2	503522	BTS-2.2Meg	
R4	68Ω	1/2	503068	BTS-68	
R5	8200Ω	1/2	503282	BTS-8200	
R6	220Ω	1/2	503122	BTS-220	
R7	3.9Meg	1/2	503539	BTS-3.9Meg	
R8	18KΩ	1/2	503318	BTS-18K	
R9	2700Ω	1/2	503227	BTS-2700	
R10	10KΩ	1/2	503310	BTS-10K	
R11	100KΩ	1/2	503410	BTS-100K	
R12	68Ω	1/2	503068	BTS-68	
R13	220Ω	1/2	503122	BTS-220	
R14	47KΩ	1/2	503347	BTS-47K	
R15	120Ω	1/2	503112	BTS-120	
R16	220Ω	1/2	503122	BTS-220	
R17	100KΩ	1/2	503410	BTS-100K	
R18	120Ω	1/2	503112	BTS-120	
R19	10KΩ	1/2	503310	BTS-10K	
R20	100KΩ	1/2	503410	BTS-100K	
R21	100KΩ	1/2	503410	BTS-100K	
R22	100KΩ	1/2	503410	BTS-100K	
R23	10KΩ	1/2	503310	BTS-10K	
R24	4.7Meg	1/2	503547	BTS-4.7Meg	
R25	220KΩ	1/2	503422	BTS-220K	
R26	470KΩ	1/2	503447	BTS-470K	
R27	150Ω	1/2	503115	BTS-150	
R28	1200Ω	4	76346	PW4-1250	
R29	22Ω	1/2	503022		

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA RCA Victor PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA PART No.
T1	117VAC @ .05A Tap @ 6.3VAC @ .15A				77666		P-2944 ①			

① Drill one new mtg. hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA RCA Victor PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T2	3KΩ	3.3Ω	260Ω Tap @ 12Ω	.6Ω	77517	A-3336 ①	A-3031 ①			① Drill one new mtg. hole.

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA RCA Victor PART No.	REPLACEMENT DATA JENSEN PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	5 1/4"	PM	3.3Ω	77539	ST-803 Mod. P525-V	52A1	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA RCA Victor PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	FM Ant. Coil	0Ω		77538			4604	1.5 Microhenries
L2	Fil. Choke	1.4Ω		77535			4612	11 Microhenries
L3	RF Choke	2.2Ω		77534			4624	15.2 Microhenries
L4	FM RF Coil	0Ω		77536				
L5	Fil. Choke	1.4Ω		77535			4612	11 Microhenries
L6	FM Osc. Coil	0Ω		77537				Tapped
L7	AM Loop Ant.	1.6Ω		77543				Includes back cover complete with power cord & 3-30 MMF trimmer Cap.
L8	AM RF Coil	65Ω	3.8Ω	77525	14-1076			Secondary tapped @ 1.3Ω
L9	AM Osc. Coil	2Ω	6Ω	77526	14-1077		71-Osc.	
L10	1st. FM IF	.3Ω	.3Ω	77514	16-3471	FM-251 *	1451 *	
L11	1st. AM IF	6Ω	6Ω	76335	16-6758	BC-352	12-C1	
L12	2nd. FM IF	1.2Ω	1.2Ω	77513	16-3472	FM-251 *	1451 *	
L13	2nd. AM IF	7Ω	7Ω	76328	16-6770	BC-355	12-C6	
L14	Fil. Choke	1.4Ω		77535			4612	11 Microhenries
L15	3rd. FM IF	1.6Ω		77512	16-3487 †	FM-254 †	1463 †	
L16	FM Discriminator	.6Ω	.8Ω CT	77511		FM-253	1464	

* Drill one new mounting hole.
† Detune unused section and add 33MMF capacitor externally.

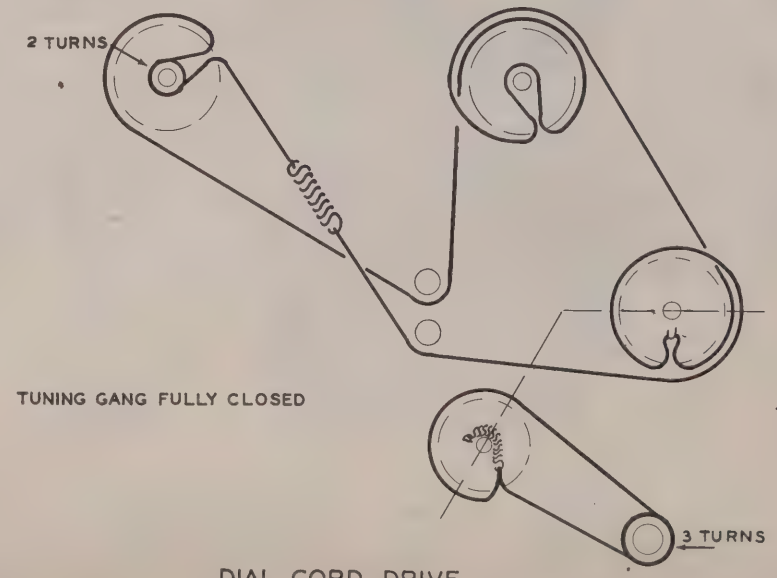
PARTS LIST AND DESCRIPTIONS (Continued)

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA RCA Victor PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.
M1	.064A	77519	NC5	5M1	1004 A	6S100	100

MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M2	Pilot Light	31480	Type #47 (2 used)
M3	Tuning Capacitor	77522	20-436MMF, 26-257MMF, 23-150MMF (Includes 2 gang FM capacitor)
M4	Switch	77524	Function Selector
A7	Trimmer	77544	AM Ant. Adj. (3-30MMF)
	Cabinet	Y2468	Model 2-XF-931
	Cabinet	Y2469	Model 2-XF-932
	Cabinet	Y2470	Model 2-XF-933
	Cabinet	Y2471	Model 2-XF-934
	Cabinet	Y2472	Model 2-XF-935
	Back	77543	Includes Loop and Trimmer Capacitor (A7)
	Pointer	77557	
	Window	77561	For left hand side
	Window	77562	For right hand side
	Knob	77548	Function Selector Model 2-XF-931
	Knob	77550	Function Selector Model 2-XF-932
	Knob	77552	Function Selector Model 2-XF-933
	Knob	77556	Function Selector Model 2-XF-934
	Knob	77554	Function Selector Model 2-XF-935
	Knob	77547	Tuning-Tone-Off/On Volume, Model 2-XF-931
	Knob	77549	Tuning-Tone-Off/On Volume, Model 2-XF-932
	Knob	77551	Tuning-Tone-Off/On Volume, Model 2-XF-933
	Knob	77555	Tuning-Tone-Off/On Volume, Model 2-XF-934
	Knob	77553	Tuning-Tone-Off/On Volume, Model 2-XF-935



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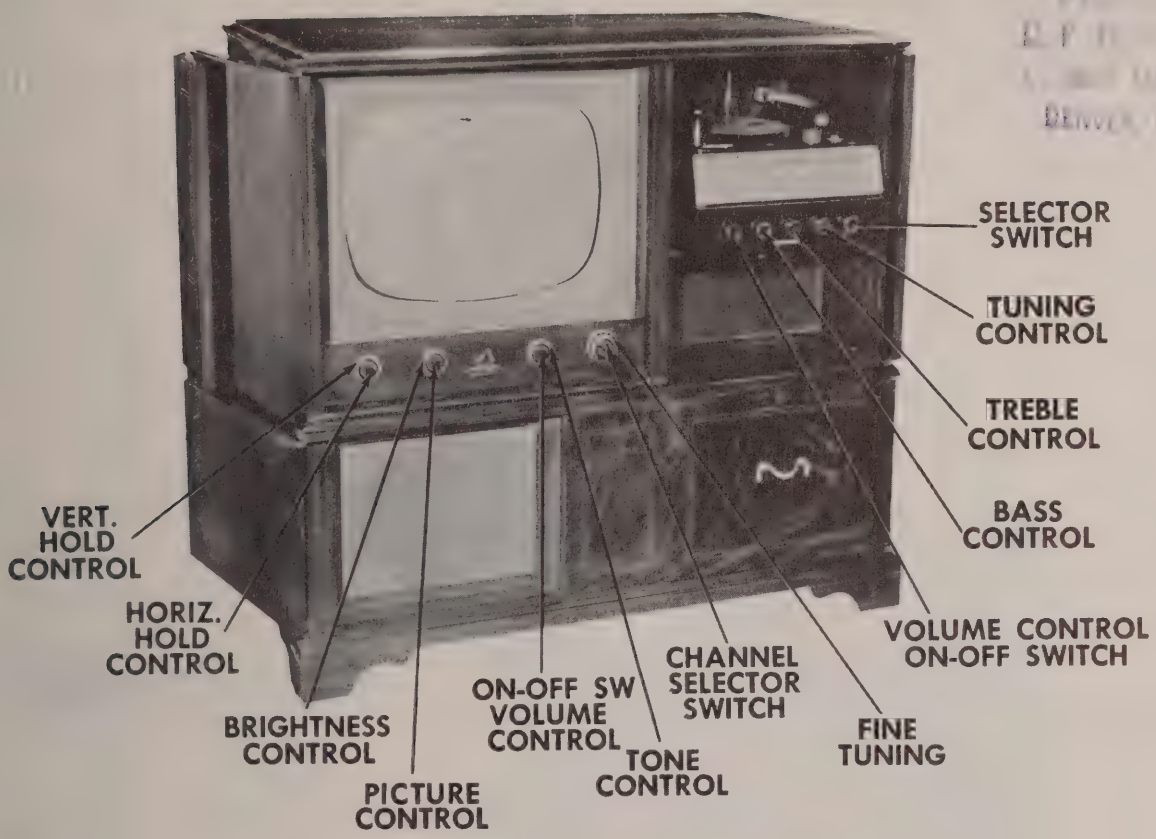

RCA VICTOR MODEL 21-T-197DE (Ch. KCS68A, Radio Ch. RC1111A & Audio Ch. RS141A)

TRADE NAME	RCA Victor Model 21-T-197DE (Ch. KCS68A, Radio Ch. RC1111A & Audio Ch. RS141A).
MANUFACTURER	RCA Victor Div., Radio Corp. of America, Camden, New Jersey.
TYPE SET	TV-AM-FM-Phono Combination Receiver
TUBES	Thirty Four
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 3.5 Amp ② 117 Volts AC (TV), .725 Amp ② 117 Volts AC (Radio)
TUNING RANGE-	TV Channels 2 thru 13, Video IF 45.75MC, TV Sound IF 41.25MC (Intercarrier) FM Radio 88-108MF, FM IF 10.7MC, AM Radio 540-1600KC, AM IF 455KC.

INDEX

Alignment Instructions (Radio) 8
Alignment Instructions (TV) 5, 6, 7
Drive Cord Stringing (Radio) 29
Disassembly Instructions 31
Horizontal Sweep Circuit Adjustments 19
Parts List and Descriptions ..... 23 thru 27
Photographs
- Alignment and Inductor Identification 16
- Cabinet-Rear View 19
- Capacitor Identification 4, 9
- Chassis -Bottom View (Radio) 22
- Chassis-Top View (Radio) 29
- Chassis -Top View (TV) 3
- High Voltage Compartment 20
- RF Tuner 18, 20
- Radio Power Chassis (Top & Bottom) 13
- Resistor Identification 21, 28

Resistance Measurements 11
Servicing in the Field 30
Schematic (Radio) 12, 17
Schematic (TV) 2
Trouble Shooting Aids 14, 15
Tube Failure Check Chart 10
Tube Placement Chart (Bottom View) 11
Tube Placement Chart (Top View) 10

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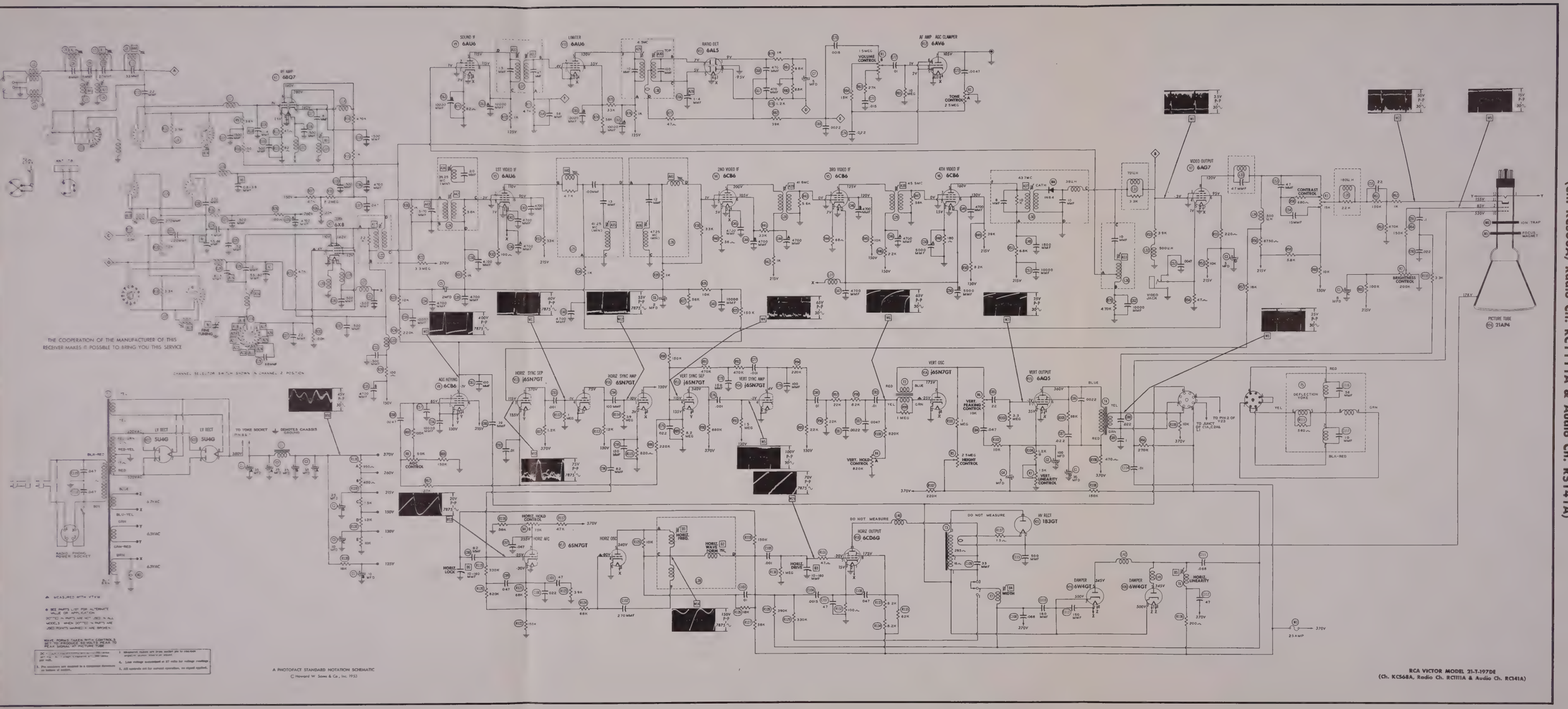
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(Ch. KCS68A, Radio Ch. RC1111A & Audio Ch. RC141A)
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TV CHASSIS-TOP VIEW

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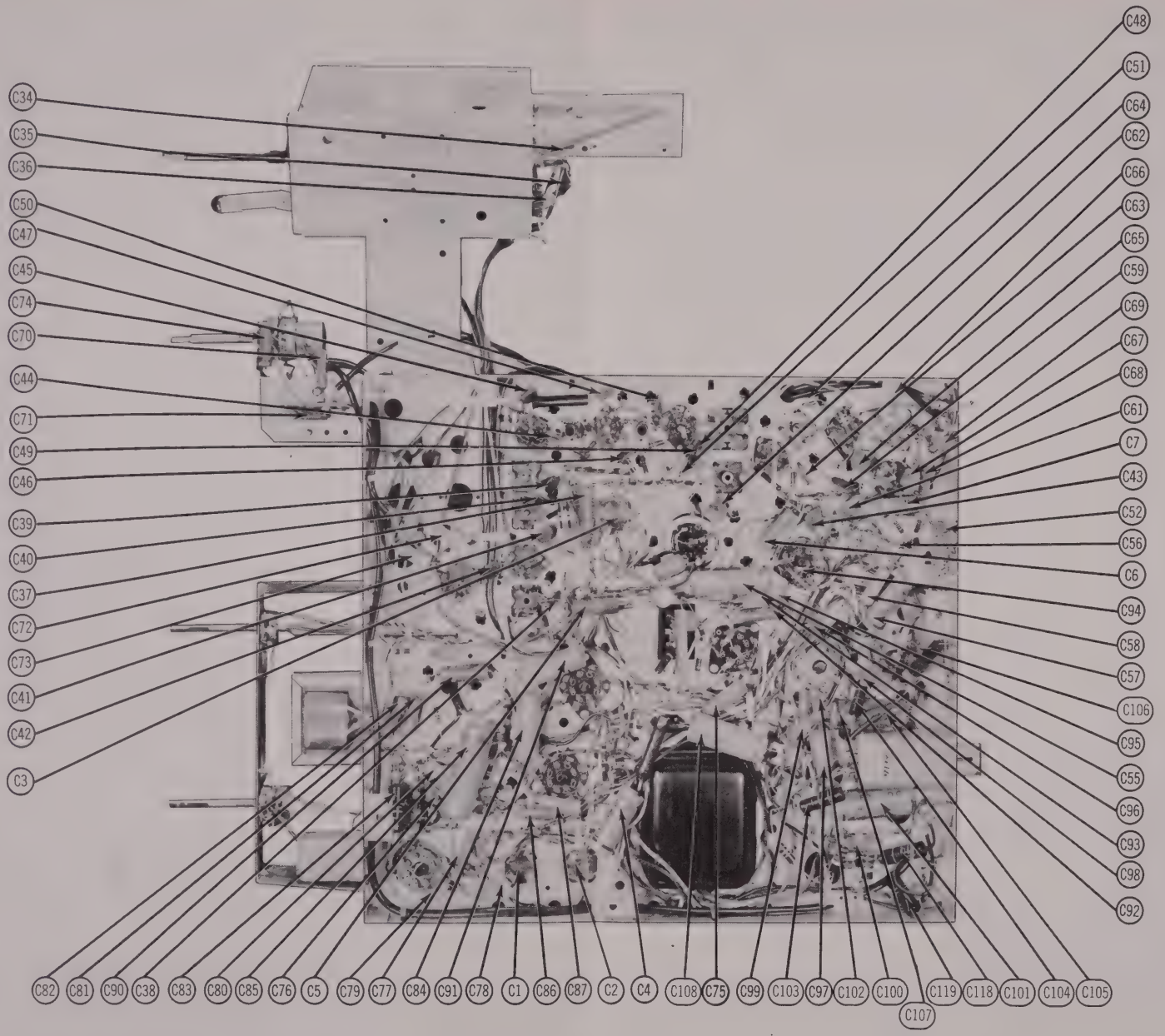


TV CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

ANTENNA MATCHING UNIT ALIGNMENT

The antenna matching unit is properly aligned at the factory. The RF unit is aligned with a particular antenna matching unit in place. If a new antenna matching unit is installed the RF unit should be realigned.
Alignment should not be attempted without the proper alignment facilities.
Disconnect the lead from the FM trap, L8, to the channel selector switch.
Use a short jumper to connect point (A) on the matching unit through a .001MFD capacitor to pin 1 (grid) of 6CB6 (V4). Remove 6AU6 (V3) from its socket.
The cover of the matching unit must be in place during alignment.
Connect the ends of a 1000 ohms potentiometer across a 7.5 volt battery capable of withstanding considerable current drain. Connect the positive terminal to chassis and the potentiometer arm to the ungrounded side of C6. Set the potentiometer arm for -6 volts at C6.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 130Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead.	Not Used.	45.75MC (400∿Mod)	Any	Vert. amp to point (B) Low side to chassis.	A1	Set oscilloscope gain to maximum and adjust A1 for MINIMUM 400∿response.
2.	"	"	"	41.25MC (400∿Mod)	"	"	A2	Adjust for MINIMUM 400∿ response on scope.
3.	"	"	50MC (10MC Swp)	50MC 52MC 53MC	"	Vert. amp thru detector probe (fig. 1) to point (A) Low side to chassis.	A3, A4	Remove the .001MFD capacitor from point (A) and connect a 300Ω carbon resistor from point (A) to chassis using short leads. Adjust A3 & A4 to obtain response curve as in Fig. 2. Repeat steps 1, 2, and 3 until no further improvement is made. Remove the 300Ω resistor and the detector probe. Restore the connection between the FM trap and the channel switch. Replace V3 in its socket.

TUNER ALIGNMENT

An RF unit which is operative and requires only minor touch-up adjustments requires no presetting of adjustments. Where complete alignment is necessary preset all adjustments to the approximate center of their range with following exceptions:
Set A10 so that the screw head projects approximately 3/8 inch above the chassis.
Set A8 1/4 turn from maximum capacity.
Disconnect the link from terminals A and B of L24 and terminate the link with a 39 ohm carbon resistor.
Short the AGC line to chassis at the tuner terminal board.
When connecting the signal generator to the grid of 6BQ7, V1, do so in the following manner:
Remove the tube from its socket and twist one end of a small piece of wire around pin 7.
Replace the tube in its socket and connect the signal generator through a .0015MFD capacitor to the free end of the wire.
Tuner alignment as outlined below requires the use of a heterodyne frequency meter.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	.0015MFD	High side to pin 7 (grid) of 6BQ7 (V1). (See instructions above). Low side to chassis.	Not used	43.5MC (400∿Mod.)	2	Vert. Amp. to point (C). Low side to chassis.	A5	Set oscilloscope gain to maximum and adjust A5 for MINIMUM 400∿ response.
5.		Connect the RF input of the heterodyne frequency meter to the free end of a short piece of wire inserted into the tuner through the hole provided for adjustment of A8.	Not used	Freq. meter to 227MC	8	Not used	A6	Remove the wire clip from pin 7 of V1 and replace V1 and shield. Set the fine tuning control 30 degrees clockwise from the center of its range at all times during oscillator adjustment. Adjust A6 for an audible beat on the frequency meter.
6.	Two 130Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead.	183MC (10MC Swp)	181.25MC 185.75MC	"	Vert. Amp. to point (C). Low side to chassis.	A7, A8, A9, A10	Set scope gain to maximum and use minimum signal which will produce a usable response on scope. Adjust for response similar to Fig. 3.
7.		Connect frequency meter as in Step 5.	Not used	Freq. meter to 129MC	6	Not used	A11	Adjust for audible beat on frequency meter.
8.	Two 130Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead.	85MC (10MC Swp)	83.25MC 87.75MC	"	Vert. Amp. to point (C). Low side to chassis.	A12, A13, A14	Adjust for response as in Fig. 3.
9.	Turn off sweep and signal generators. Connect the DC probe of a VTVM to point (C). Common to chassis. Adjust A15 for -3.5 volts of VTVM of maximum if less than -3.5 volts.							
10.	Repeat step 8.							
11.	Repeat step 5.							
12.	Repeat step 6.							
13.	If A7 was adjusted in step 12, recheck the oscillator injection voltage on channel 6 as in Step 9. If the initial setting of A15 was far off it may be necessary to adjust the oscillator frequency and response on channel 8, adjust the oscillator injection on channel 6 and repeat the procedure several times to obtain the proper setting.							
14.		Connect frequency meter as in Step 5.	Not used	Freq. meter to 257MC	13	Not used	A16	Adjust for audible beat on frequency meter. Slightly overshoot the adjustment a little more in the same direction from the original setting then adjust A6 to again obtain audible beat.
15.	Two 130Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. to point (C). Low side to chassis.		Check for response similar to Fig. 3. If markers fall below 80% switch to channel 8 and readjust A7, A8, A9 and A10 as necessary.
			207MC (10MC Swp)	205.25MC 209.75MC	12			
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
16.		Connect frequency meter as in Step 5.	Not used	Set freq. meter to 227MC	8	Not used		Check for audible beat on frequency meter. If necessary adjust A6, overshoot the adjustment and correct by adjusting A16.
17.		"	"	Set freq. meter to 129MC	6	"	A11	Adjust for audible beat on frequency meter.
18.	Two 130Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead.	85MC (10MC Swp)	83.25MC 87.75MC	6	Vert. Amp. to point (C). Low side to chassis.		Check for response as in Fig. 3. If necessary retouch A12, A13 and A14.
19.	"	"	57MC (10MC Swp)	55.25MC 59.75MC	2	"	A17	Adjust A17 clockwise to a point where further adjustment causes no change in response curve.
20.	"	"	85MC (10MC Swp)	83.25MC 87.75MC	6	"		Check for response as in Fig. 3 and for proper oscillator injection voltage at point (D). If excessive tilt occurs on channels 2, 3 and 4 adjust A10 on channel 2, overshoot the correction of tilt, then adjust A14 on channel 6 for maximum amplitude of response between markers. This should produce flat response on low channels if other adjustments, especially A12 are correct.
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			
21.	Check channels 7 thru 13 for proper response as in Step 15.							
22.		Connect frequency meter as in step 5.	Not used	Set freq. meter to 257MC	13	Not used		Check for audible beat on frequency meter. Adjust A6 if necessary.
23.		"	"	251MC	12	"	A18	Adjust for audible beat on frequency meter.
				245MC	11		A19	
				239MC	10		A20	
				233MC	9		A21	
				227MC	8		A22	
				221MC	7		A23	
				129MC	6		A11	
				123MC	5		A24	
				113MC	4		A25	
				107MC	3		A26	
				101MC	2		A27	

SOUND IF ALIGNMENT

Set volume control for maximum output.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
24.	.001MFD	High side to pin 1 (grid) of 6AU6 (V10). Low side to chassis.	Not used.	4.5MC (400% Mod)	Any	Use VTVM. DC probe to point (D) Common to chassis.	A28 A29	Set A28 to minimum capacity. Adjust A29 for maximum deflection. Attenuate generator to maintain -10 Volts at VTVM.
25.	"	"	"	"	"	Connect scope across voice coil, VTVM. DC probe to point E Common to chassis.	A30	Adjust A30 for zero reading on VTVM. A positive or negative reading will be obtained on either side of the correct setting. Then adjust A30 to nearest MINIMUM 400% indicating on scope.
26.	Repeat adjustments of A29 for maximum deflection and A30 for minimum audio output with final adjustment at an input level to produce 10 Volts on VTVM at point (D)							
27.	Check voltage with VTVM at point (E). If in excess of +1.5 Volts adjust A28 for zero DC. Readjust A30 for minimum output on scope. Repeat adjustments of A28 and A30 until voltage at point (E) is less than +1.5 Volts when A30 is set for minimum audio output.							
28.	Repeat steps 24 and 27 except do not preset A28 to minimum capacity again.							

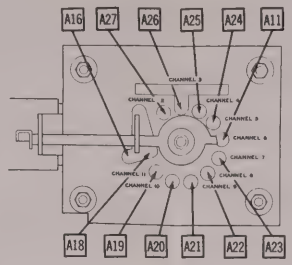
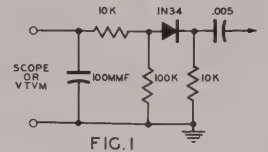


FIG. 1



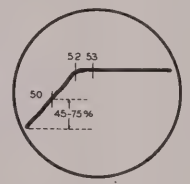


FIG. 2

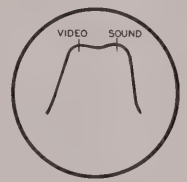


FIG. 3

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
29.	.001MFD	High side to pin 1 (grid) of 6AU6 (V9). Low side to chassis.	4.5MC (1MC Swp)	4.5MC	Any	Vert. amp thru 10KΩ to point (C) Low side to chassis.	A31, A32	Adjust for curve of maximum amplitude and symmetry as in Fig. 4. Attenuate generator to maintain 1.2 Volt peak to peak response.
30.	1000Ω Carbon Resistor	High side to terminal "C" of L36. Low side to chassis.	Not used.	4.5MC	"	Use VTVM. DC probe thru detector (Fig. 1). to pin 8 (Plate) of 6AG7 (V7). Common to chassis.	A33	Short pin 1 of V6 to chassis. Adjust for MINIMUM deflection. Remove short from pin 1 of V6.

VIDEO IF TRAP ALIGNMENT

Connect a bias supply as under Antenna Matching Unit Alignment and set the potentiometer arm for -1 volt.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
31.	Direct	Across aterminals A and B of L24.	39.25MC	Any	DC probe to point (B) Common to chassis.	A34	Adjust for MINIMUM deflection.
32.	"	"	41.25MC	"	"	A35	"
33.	"	"	47.25MC	"	"	A36	"

VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
34.	.001MFD Ceramic Resistors	High side to pin 1 (grid) of 6AU6 (V3). Low side to chassis.	Not used.	43.7MC	Any	Use VTVM. DC probe to point (B) Common to chassis.	A37	Adjust for maximum deflection. Attenuate generator output to maintain 1 Volt at VTVM with -1 Volt bias on IF AGC line.
35.	"	"	"	45.5MC	"	" A38	A38	"
36.	"	"	"	41.8MC	"	"	A39	"
37.	"	"	43MC (10MC Swp)	41.25MC 42.0MC 45.0MC 45.75MC 46.5MC 47.25MC	"	Vert. amp to point (B) Low side to chassis.	A40, A41	Shunt R43, R47 and terminals A and F of L30 with 330Ω Carbon Resistors. Adjust for maximum gain and curve shape as in Fig. 5. Attenuate generator for .5 Volt peak to peak response.
38.	.001MFD Ceramic Capacitor	High side to point (G). Low side to chassis. Use short leads.	"	41.25MC 41.9MC 44.5MC 45.75MC	4	Vert. amp thru detector (Fig. 1) to pin 5 (plate) of 6AU6 (V3). Low side to chassis.	A17, A42 A43	Use seperate marker generator and couple loosely to detector probe. Preset A43 to minimum capacity. Connect a 180Ω Carbon Resistor from terminal B of L25 to the junction of R34 and C40. Adjust A17 and A42 for maximum gain at 43.5MC with 45.75MC at 70% response. Adjust A43 until 41.25MC is at 85% response with respect to the low frequency shoulder at approximately 41.9MC as in Fig. 6. Disconnect the 180Ω and the three 330Ω resistors.
39.	"	"	"	42.25MC 42.5MC 45.0MC 46.5MC	"	Vert. amp to point (B) Low side to chassis.		Adjust the bias supply for -6 Volts at point of application. Couple the marker generator loosely to pin 1 (grid) of 6AU6 (V3). Retouch A37 and A38 for response as in Fig. 7. Do not readjust A39 unless absolutely necessary because of its effect on sound carrier level.

FM TRAP ADJUSTMENT

Tune in a TV station on which FM interference is noted and adjust A44 to minimize the interference. On some receivers A44 will tune into channel 6 or 5. Care must be used to avoid this possibility as reduced sensitivity on these channels will result.

FIG. 4

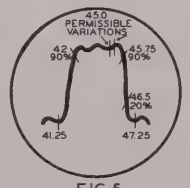


FIG. 5

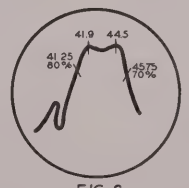


FIG. 6

FIG. 7

RADIO ALIGNMENT INSTRUCTIONS

Turn the tuning gang fully closed and set the pointer to the last calibration point at the extreme left end of the dial.
Turn the tone controls for maximum highs and maximum lows.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
When adjusting IF cores, start with cores all the way out. The first peak obtained will be the correct one.

AM IF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
40.	.01MFD	High side to pin 1 (grid) of 6BA6 (V27). Low side to chassis.	455KC (400∿Mod)	AM	Low frequency end of dial.	Across voice coil	A45 A46	Adjust for maximum output.
41.	"	High side to stator of AM RF section of tuning gang. Low side to chassis.	"	"	"	"	A47 A48	"

FM ALIGNMENT

Top shield of unit must be on and bottom shield off.

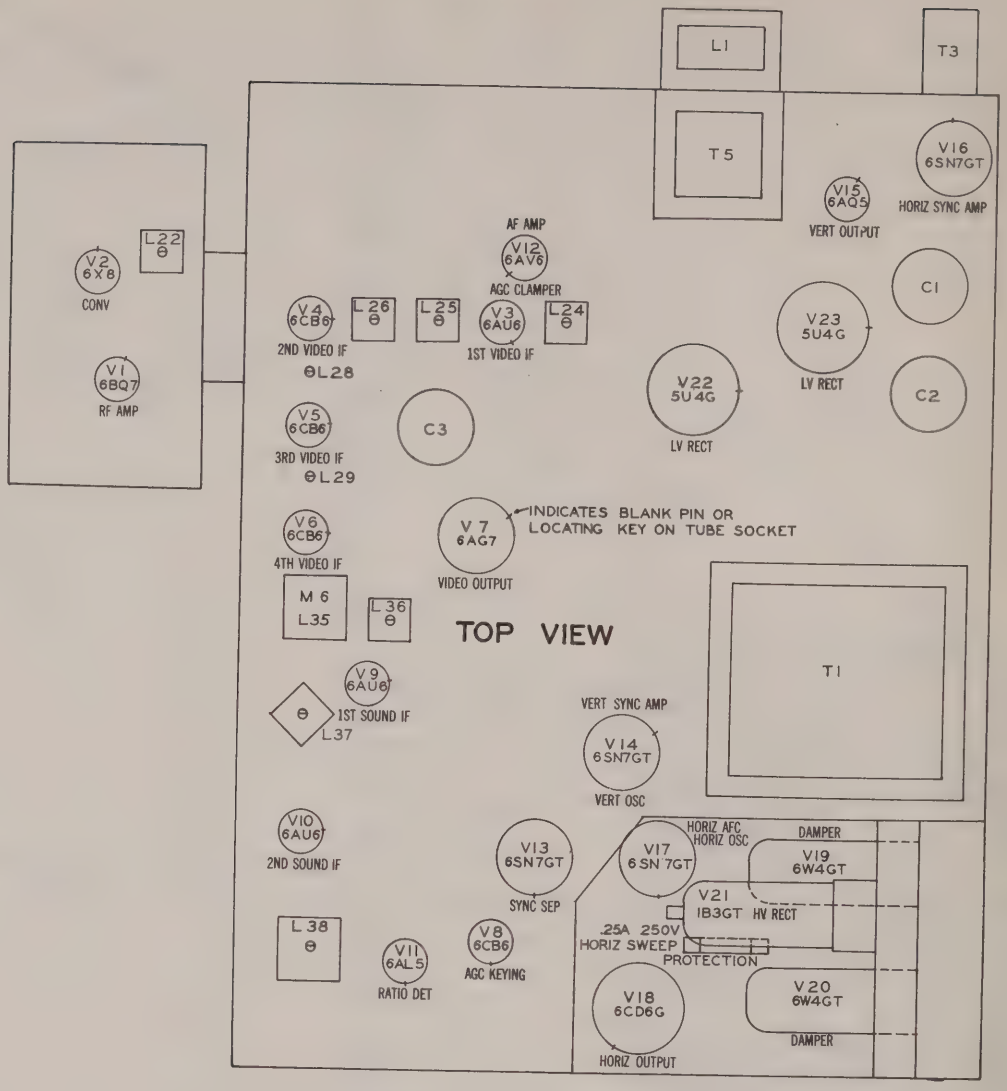
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
42.	.01MFD	High side to pin 1 (grid) of 6AU6 (V28). Low side to chassis.	10.7MC (30% AM)	FM	Quiet Point	DC probe to point (H). Common to chassis.	A49 A50	Connect output meter across voice coil. Adjust A49 for maximum deflection on VTVM. Adjust A50 for MINIMUM audio output. Repeat entire step making final adjustment with generator set to give -4 volts on VTVM.
43.	"	High side to pin 1 (grid) of 6BA6 (V27). Low side to chassis.	10.7MC	"	88MC	"	A51, A52	Adjust for maximum deflection.
44.	"	High side to stator of FM RF section of tuning gang. Low side to chassis.	"	"	"	"	A53, A54	"
45.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead	90MC (22.5KC Swp)	"	90MC	Not used	L46	Connect output meter across voice coil. Compress or expand L46 for maximum output.
46.	"	"	106MC (22.5KC Swp)	"	Tune to 106MC signal	DC probe to point (H). Common to chassis.	A55, A56	Adjust for maximum deflection.
47.	"	"	90MC (22.5MC Swp)	"	Tune to 90MC signal	"	L43 L45	Compress or expand coils for maximum deflection.
48.	Repeat steps 45, 46 and 47 as necessary.							

AM RF ALIGNMENT

RF shields should be in place during steps 49 and 50.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
49.		Loop	1620KC	AM	Tuning gang fully open	Across voice coil	A57	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
50.		"	1400KC	"	Tune to 1400KC signal	"	A58, A59	"
51.		"	600KC	"	Tune to 600KC signal	"	A60	Clip a 10KΩ resistor across AM RF section of tuning gang. Adjust A60 for maximum output while rocking gang. Remove 10KΩ resistor.
52.		"	"	"	"	"	A61	Adjust for maximum output.
	Repeat RF alignment until no improvement in sensitivity is noted.							

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V22, V23

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5, V6
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V7, V24
Has pic, no sound - V9, V10, V11, V12, V32, V33
Overloaded picture - V8

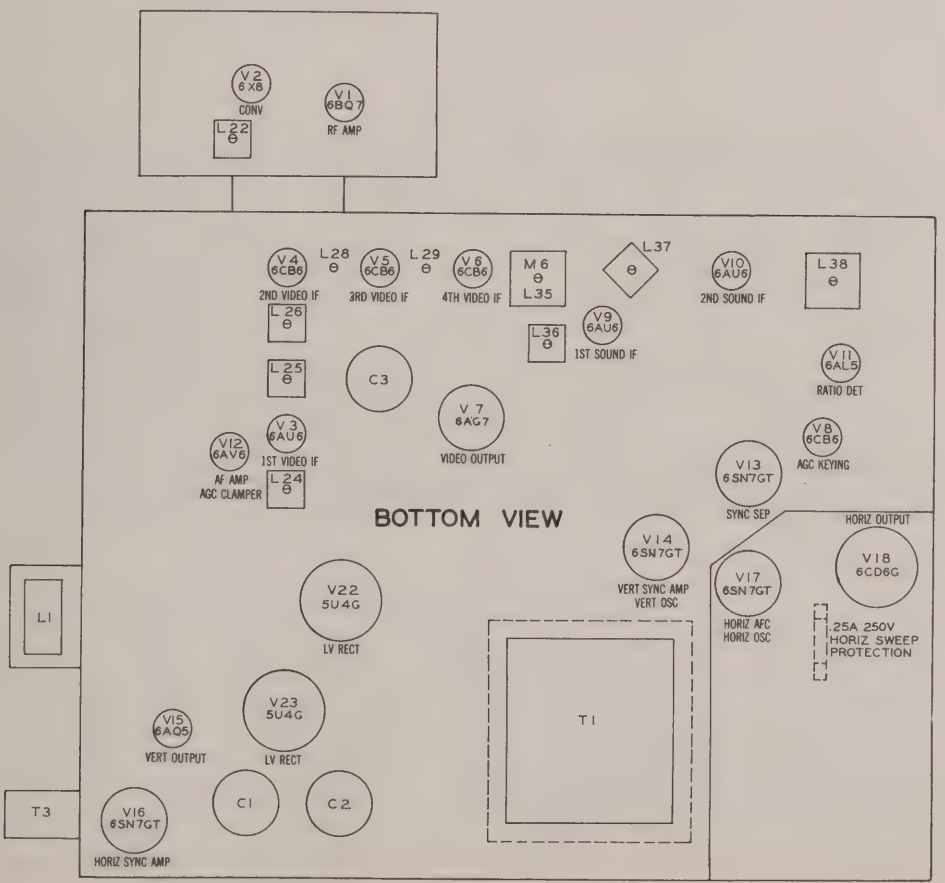
SYNC FAILURE
No vert. sync - V14
No horiz. sync - V16, V17
No vert. or horiz. sync - V13

SWEEP FAILURE
No raster, has sound -V17, V18, V19, V20, V21, V24 Fuse (M1)
No vertical deflection - V14, V15
Poor vert. linearity or foldover -V14, V15
Poor horiz. linearity or foldover - V17, V18, V19, V20
Narrow picture - V17, V18, V19, V20, V21, V22, V23
Vert. off freq. - V14
Horiz. off freq. - V16, V17

RESISTANCE MEASUREMENTS

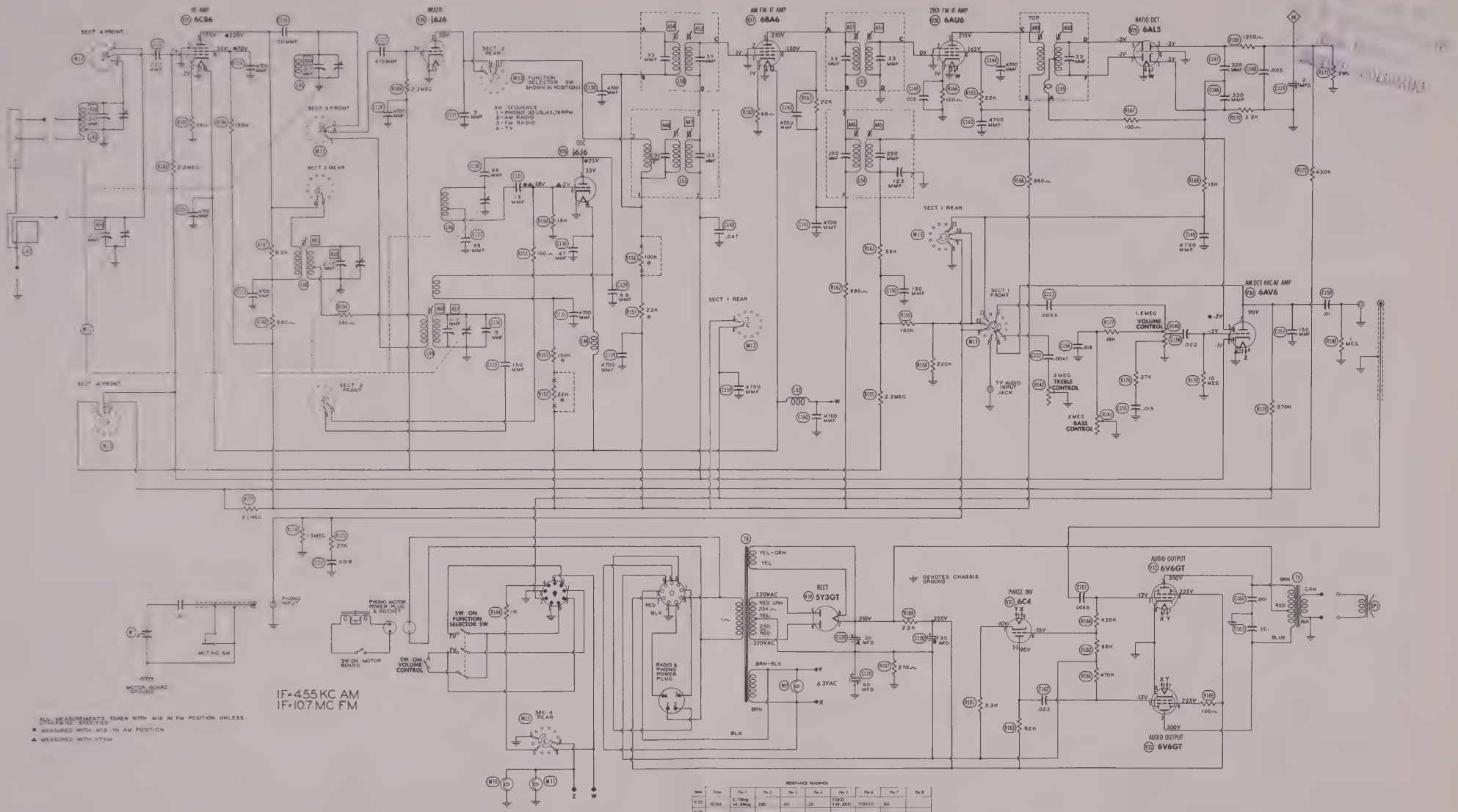
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7	†2.1KΩ	8.3Meg	8.9Meg	0Ω	.1Ω	†8.8Meg	450KΩ	129Ω	0Ω
V 2	6X8	†2.8KΩ	100KΩ	†7.5KΩ	0Ω	.1Ω	0Ω	100KΩ	†2.8KΩ	†2.8KΩ
V 3	6AU6	57KΩ	0Ω	0Ω	.1Ω	†12.4KΩ	†34KΩ	100Ω		
V 4	6CB6	57KΩ	56Ω	0Ω	.1Ω	†2.4KΩ	†34KΩ	0Ω		
V 5	6CB6	.2Ω	68Ω	.1Ω	0Ω	†5.5KΩ	†14.3KΩ	0Ω		
V 6	6CB6	.2Ω	180Ω	.1Ω	0Ω	†9.8KΩ	†9.3KΩ	0Ω		
V 7	6AG7	0Ω	0Ω	0Ω	3.9KΩ	47Ω	†16.5KΩ	.1Ω	†8.1KΩ	
V 8	6CB6	260KΩ	†4.1KΩ	†4.1KΩ	†4.1KΩ	215KΩ	†1.4KΩ	†4.1KΩ		
V 9	6AU6	470KΩ	0Ω	0Ω	.1Ω	†19KΩ	†19KΩ	82Ω		
V 10	6AU6	47KΩ	0Ω	0Ω	.1Ω	†16KΩ	30KΩ	0Ω		
V 11	6AL5	7.8KΩ	8KΩ	.1Ω	0Ω	INF	0Ω	INF		
V 12	6AV6	10Meg	0Ω	0Ω	.1Ω	450KΩ	450KΩ	‡270KΩ		
V 13	6SN7GT	†26KΩ	†1.3KΩ	230KΩ	400KΩ	†680KΩ	400KΩ	†4.1KΩ	†4.1KΩ	
V 14	6SN7GT	1.4Meg	†1.7Meg	0Ω	†1.5Meg	†246KΩ	0Ω	0Ω	.1Ω	
V 15	6AQ5	3.3Meg	2.3KΩ	0Ω	.1Ω	†1.1KΩ	†1.1KΩ	INF		
V 16	6SN7GT	3.9Meg	†4.1KΩ	820Ω	†1Meg	†16KΩ	0Ω	0Ω	.1Ω	
V 17	6SN7GT	1.3Meg	†50KΩ	218KΩ	218KΩ	†56KΩ	0Ω	0Ω	.1Ω	
V 18	6CD6G	INF	0Ω	100Ω	INF	1 Meg	100Ω	.1Ω	†14KΩ	Top Cap ■18.8Ω
V 19	6W4GT	INF	200KΩ	200KΩ	INF	†212Ω	INF	INF	INF	
V 20	6W4GT	INF	INF	200KΩ	INF	†212Ω	INF	INF	INF	
V 21	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								Top Cap ■301Ω
V 22	5U4G	INF	12KΩ	INF	13Ω	INF	12Ω	INF	12KΩ	
V 23	5U4G	INF	12KΩ	INF	13Ω	INF	12Ω	INF	12KΩ	
V 24	21AP4	†4.1KΩ	220KΩ	Pin 10 500KΩ	Pin 11 120KΩ	Pin 12 †4.1KΩ				

† MEASURED FROM PIN 2 OF V23.
■ MEASURED FROM PIN 3 OF V19.
‡ MEASURED FROM PIN 8 OF V34 IN RADIO CHASSIS.



TUBE PLACEMENT CHART

RCA VICTOR MODEL 21-T-197DE
(Ch. KCS68A, Radio Ch. RC1111A & Audio Ch. RS141A)


RF AMP V25 6CB6
MIXER V26 6J6
OSC V26 6J6
AM FM IF AMP V27 6BA6
2ND FM IF AMP V28 6AU6
RATIO DET V29 6AL5
AM DET AVC/AF AMP V30 6AV6
AUDIO OUTPUT V32 6V6GT
AUDIO OUTPUT V33 6V6GT
PHASE INV V31 6C4
RECT V34 5Y3GT
SECT 4 FRONT
SECT 3 FRONT
SECT 3 REAR
SECT 2 REAR
SECT 2 FRONT
SECT 1 REAR
SECT 1 FRONT
SECT 4 REAR
SW SEQUENCE
1 - PHONO 33 1/3, 45, 78 RPM
2 - AM RADIO
3 - FM RADIO
4 - TV
1.5 MEG VOLUME CONTROL
2 MEG TREBLE CONTROL
2 MEG BASS CONTROL
TV AUDIO INPUT JACK
PHONO INPUT
PHONO MOTOR POWER PLUG & SOCKET
SW ON MOTOR BOARD
SW ON VOLUME CONTROL
SW ON FUNCTION SELECTOR SW
MUTING SW
MOTOR BOARD GROUND
RADIO & PHONO POWER PLUG
DENOTES CHASSIS GROUND
IF = 455 KC AM
IF = 10.7 MC FM
ALL MEASUREMENTS TAKEN WITH M13 IN FM POSITION UNLESS OTHERWISE SPECIFIED
● MEASURED WITH M13 IN AM POSITION
▲ MEASURED WITH VTVM

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 25	6CB6	2.7 Meg +4.5 Meg	39Ω	0Ω	10Ω	110KΩ +43.5KΩ	110KΩ	0Ω	
V 26	6J6	1124KΩ	1124KΩ	0Ω	0Ω	5 Meg	18KΩ	0Ω	
V 27	6BA6	1124KΩ 500KΩ +2.5 Meg	0Ω	0Ω	0Ω	93.5KΩ	125KΩ	68Ω	
V 28	6AU6	1Ω	0Ω	0Ω	0Ω	93.5KΩ	125KΩ	125Ω	
V 29	6AL5	2.2KΩ	60KΩ	1Ω	0Ω	INF	0Ω	INF	
V 30	6AV6	10 Meg	0Ω	0Ω	0Ω	250KΩ 430KΩ	500KΩ +2.5 Meg	19700Ω	
V 31	6C4	150KΩ	INF	0Ω	0Ω	195KΩ	68KΩ	3.8KΩ	
V 32	6V6GT	90	0Ω	120Ω	93.5KΩ	500KΩ	270Ω	0Ω	0Ω
V 33	6V6GT	0Ω	0Ω	120Ω	93.5KΩ	470KΩ	270Ω	0Ω	0Ω
V 34	5Y3GT	INF	1 Meg	INF	324Ω	INF	350Ω	INF	1 Meg

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS NOTED.
+ TAKEN WITH VACUUM TUBE VOLTMETER.
● MEASURED IN "AM" POSITION.
† MEASURED FROM PIN 3 OF V34.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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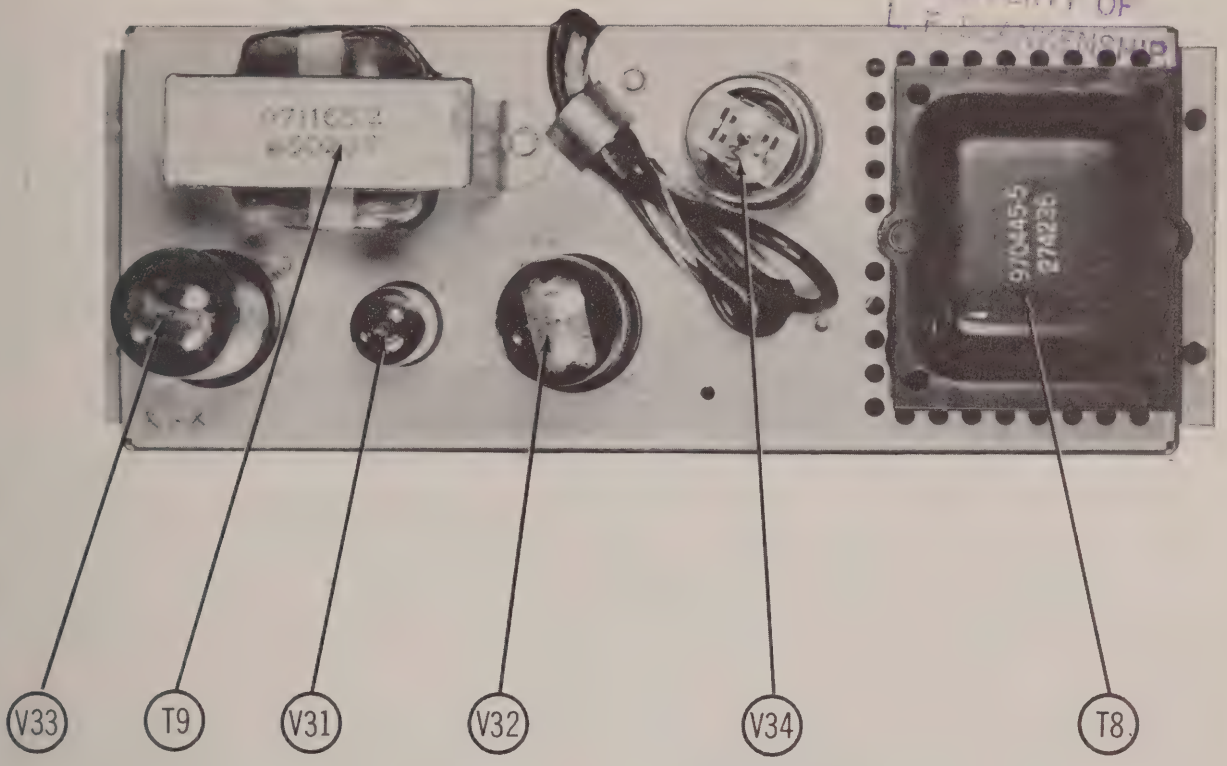
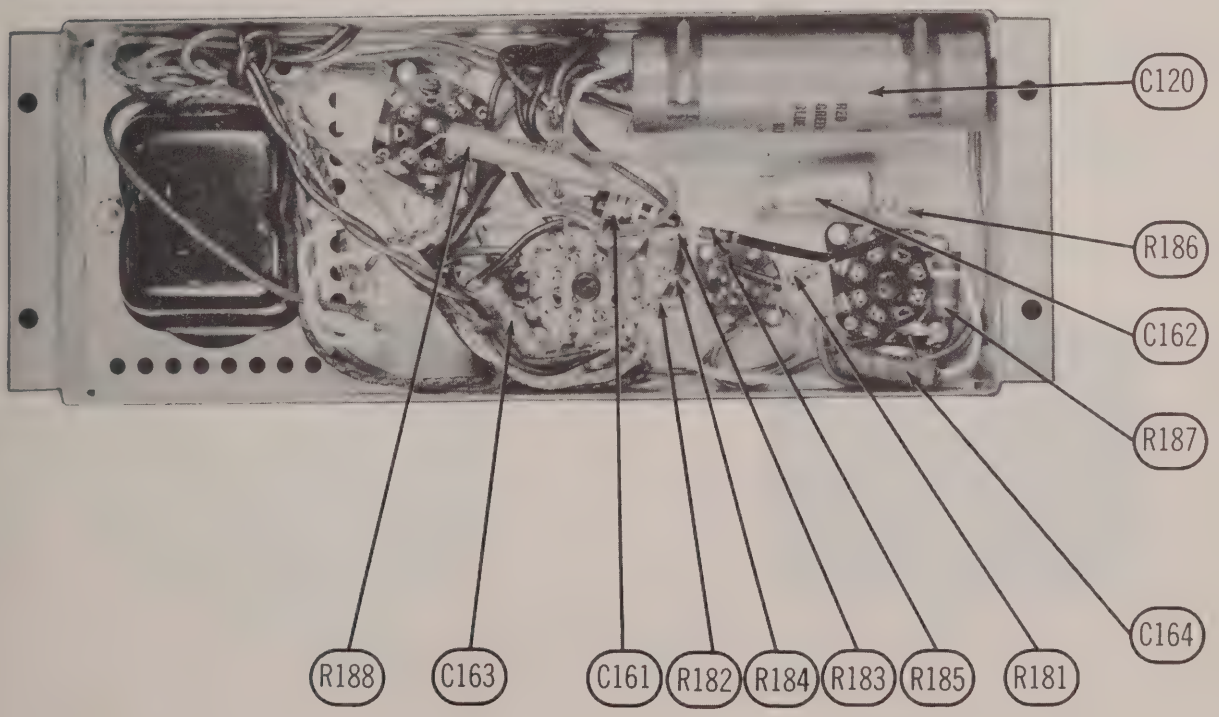
RCA VICTOR MODEL 21-T-197DE
(Ch. KCS68A, Radio Ch. RC1111A & Audio Ch. RC141A)

RADIO SCHEMATIC

PROPERTY OF



POWER SUPPLY CHASSIS-TOP VIEW



POWER SUPPLY CHASSIS-BOTTOM VIEW

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP (Fig. 1)

Check yoke. Check solder connection, yoke plug and socket.

INSUFFICIENT SWEEP

Check by substitution V17, V18, V19, V20, V22 and V23. Check amplitude of waveform W15.

If Insufficient	If Sufficient
Check components of V17. Check coupling capacitor between V17 and V18.	Check components of horizontal output circuit, particularly C104, C107, C106, R132 and R133. See NARROW PICTURE WITH JAGGED STREAKS.

NARROW PICTURE WITH JAGGED STREAKS

Check for arcing in width coil by pulling width link. If picture widens and streaks disappear replace width coil.

VERTICAL

LOSS OF SWEEP

Substitute V14 and V15. Check waveform W7.

If Unsatisfactory	If Satisfactory
Check T2 and other components associated with the vertical oscillator. Check coupling capacitor between V14 and V15 for open.	Check T4 and T5B. Check other components of the vertical output tube V15.

INSUFFICIENT SWEEP

Substitute V14 and V15. Follow procedure outlined under LOSS OF SWEEP.

COMPRESSED AT TOP

Substitute V14 and V15. Check coupling and waveshaping network between V14 and V15.

COMPRESSED AT BOTTOM

Substitute V14 and V15. Check C2C for open and C85 for leakage.

FOLDS

Substitute V15. Check T5 and T6B. Check associated components.

SYNC

HORIZONTAL

LOSS OF SYNC

Check by substitution, V13, V16 and V17. Check waveform W13;

If Unsatisfactory	If Satisfactory
Check waveform W11.	Adjust horizontal oscillator following instructions in HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS. Check components of horiz. oscillator.

Check waveform W11;

If Unsatisfactory	If Satisfactory
Check C93 and components associated with V13.	Check components of horizontal sync amplifier V16. Check C96.

CRITICAL SYNC

Check C97 for open. Check components of V13, V16 and V17.

PULLING PICTURE

Check C96 and C97 for open.

WAVY PICTURE (Fig. 2)

Check C101 and R123 for open.

VERTICAL

LOSS OF SYNC

Substitute V13 and V14. Check waveform W6;

If Unsatisfactory	If Satisfactory
Check components of sync seperator and vertical sync amplifier. Check integrating network between V14A and V14B.	Check T2 and other components of the vertical oscillator. Check the coupling and waveshaping network between V14B and V15.

CRITICAL SYNC

Substitute V13 and V14. Follow procedure outlined under LOSS OF SYNC.

TRIGGERING

Substitute V14. Dress filament leads away from any grid leads of the vertical oscillator.

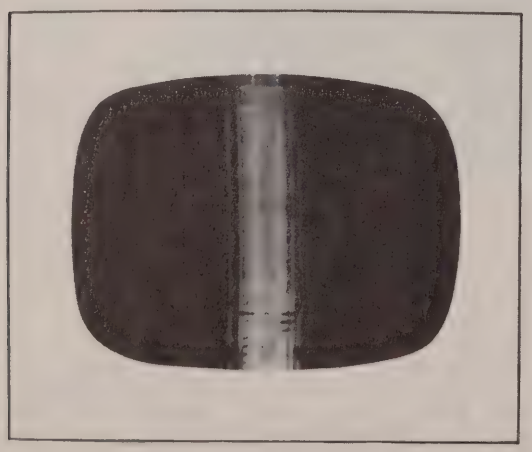


Fig. 1. LOSS OF SWEEP
SEE HORIZ. SWEEP

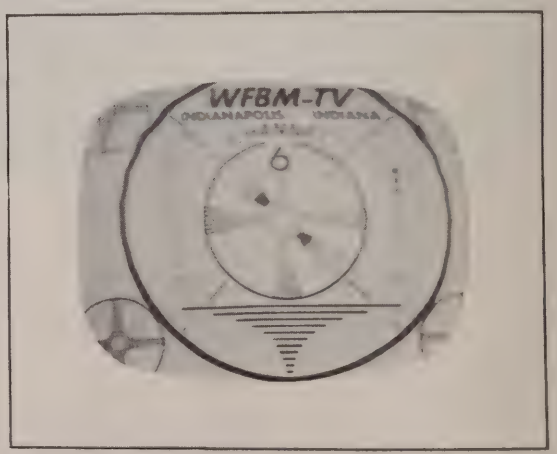


Fig. 2. WAVY PICTURE
SEE HORIZ. SYNC

TROUBLE SHOOTING AIDS (CONT.)

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...ST.
DENVER, COLORADO

VIDEO

SOUND BARS

Check resonant frequency of 4.5MC trap. If not correct frequency, replace. Check local oscillator adjustment and video IF alignment.

POOR RESOLUTION

Check by substitution, video IF tubes. Check alignment of video IF stages.

SMEAR

Check video amplifier V7 and associated components, particularly the peaking coils.

ONE WIDE BLACK BAR

Check tuner, video IF and video amplifier tubes for filament to cathode leakage.

POOR CONTRAST

Check waveform W1.

If unsatisfactory	If Satisfactory
Check by substitution V1, V3, V4, V5 and V6. Check alignment.	Check waveform W2.

Check waveform W2.

If Unsatisfactory	If Satisfactory
Substitute V7 and check associated components.	Check components of picture tube grid circuit . Check picture tube.

AUDIO

WEAK OR NO SOUND

Check by substitution V9, V10, V11, V12, V32 and V33. Check associated components. Check speaker. Check sound IF and ratio detector alignment. Check for dirty contacts on the function switch.

BUZZ

Adjust ratio detector secondary for minimum buzz. If still noticeable, substitute V11 and readjust.

DISTORTED

Check audio amplifier stages V12, V32 and V33 using audio signal generator and scope.

If Undistorted	If Distorted
Substitute V9, V10 and V11. Check adjustment of ratio detector.	Check components of stage where distortion occurs.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check .2 ampere fuse located in high voltage cage. Substitute V17, V18, V19, V20 and V21. Check waveform W15;

If Unsatisfactory	If Satisfactory
Check horizontal oscillator components and coupling network between V17 and V18.	Check components of horizontal output and damper stages. Check T3 and T5A. Check high voltage filter.

INSUFFICIENT HIGH VOLTAGE

Follow procedure outlined under LOSS OF HIGH VOLTAGE.

BLOOMING

Follow procedure outlined under LOSS OF HIGH VOLTAGE and check V22 and V23 for low emission.

LOSS OF FOCUS

Check C106 for open. Follow procedure outlined under BLOOMING.

POWER

SET DEAD

Check V22 and V23. Check T1. Check interlock. Check filter choke for open.

DIM PICTURE

Follow procedure outlined under SET DEAD. Check Boost B plus tubes and circuit. Check picture tube.

GENERAL

RASTER BUT NO PICTURE OR SOUND

Check by substitution, V2, V3, V5, V6 and V 7. Check associated components.

WEAK PICTURE AND WEAK SOUND

Substitute V4 and check components.

SOUND BUT NO PICTURE

Check by substitution V7, V8 and V16. Check associated components.

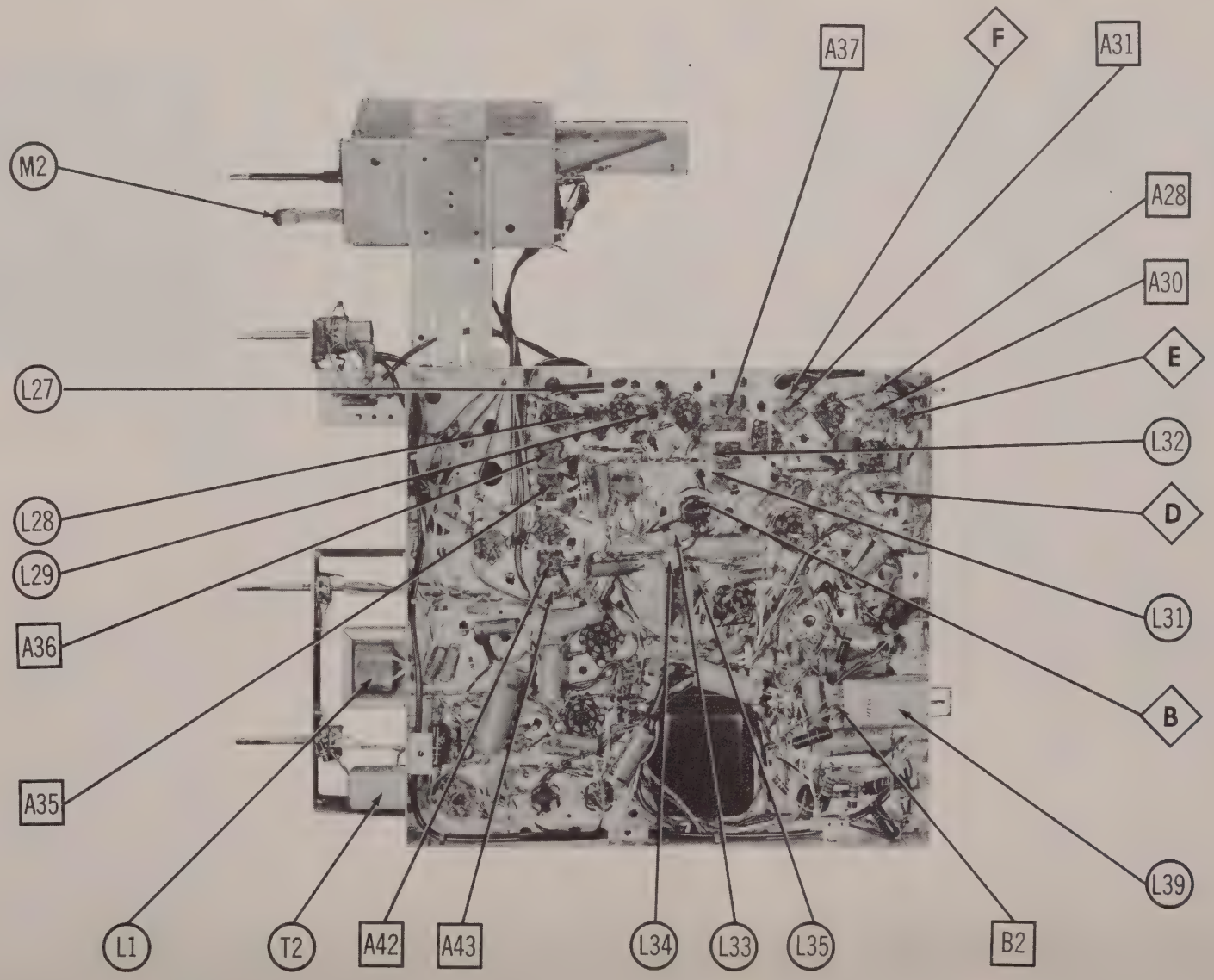
VERY SNOWY PICTURE

Substitute V1 and check tuner components.

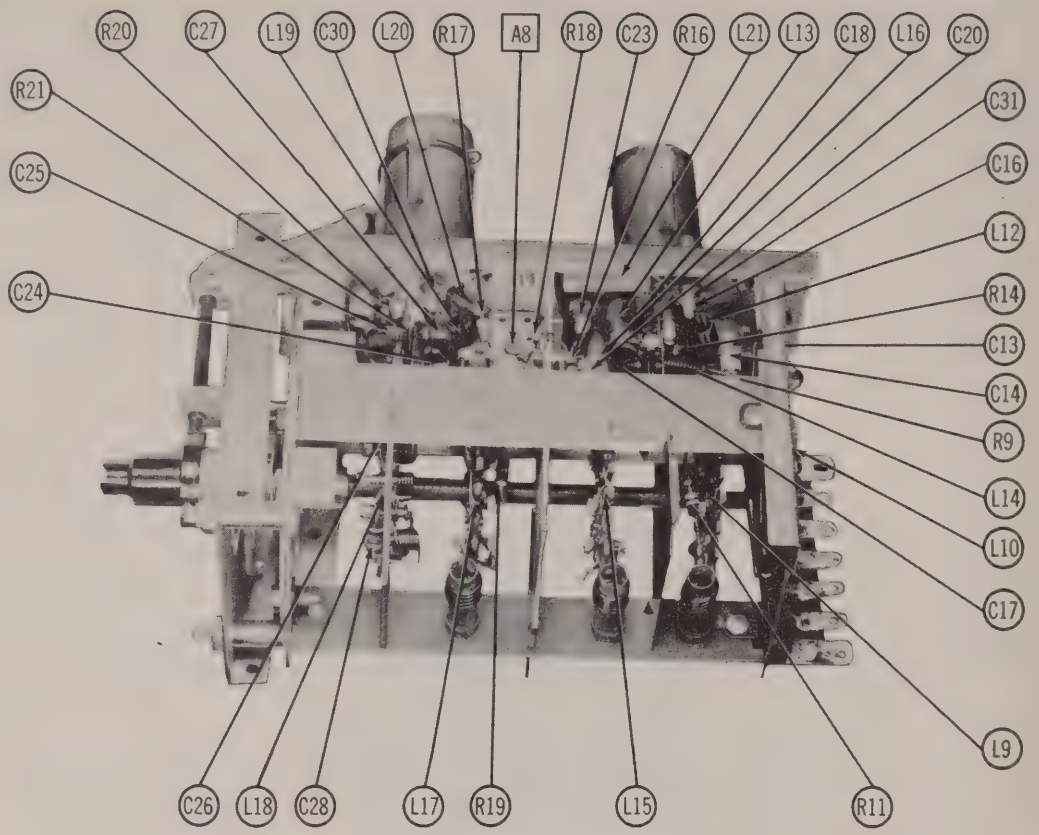
INTERMITTENT STREAKS

Check high voltage circuit for corona arcing and leakage.

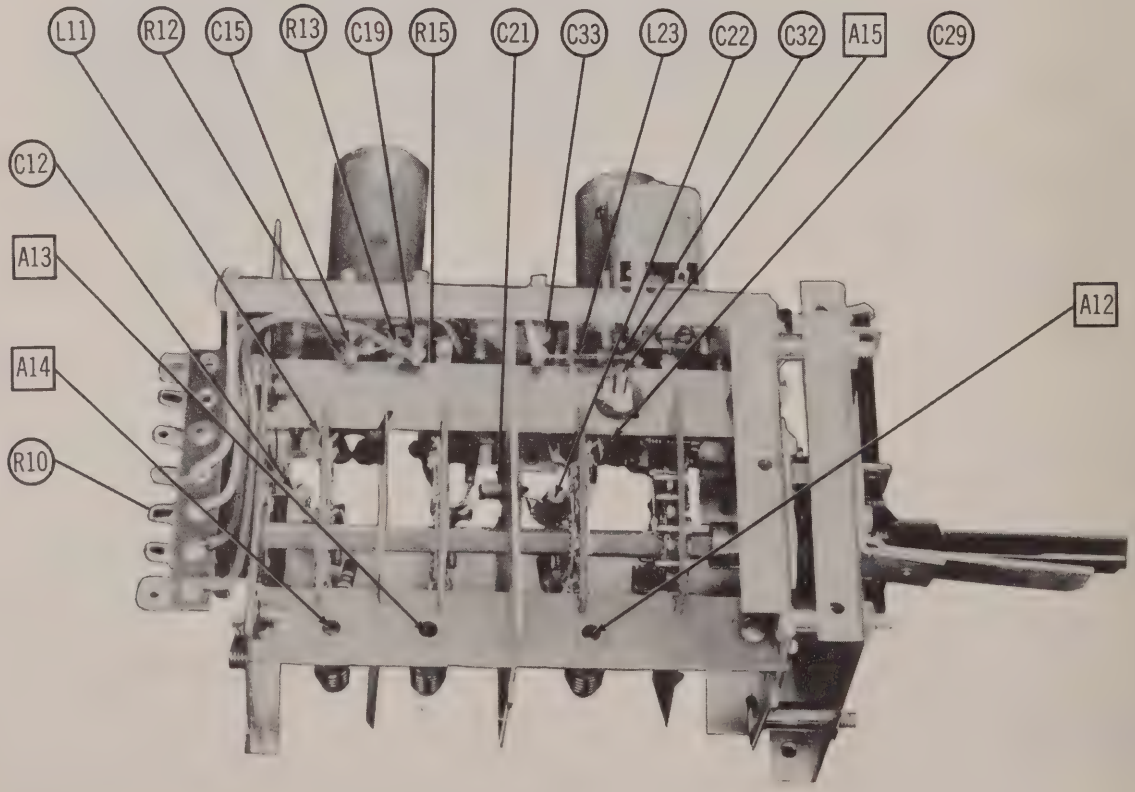
The Trouble-Shooting photographs shown above are made with permission of transmitting station WFBM-TV and in no way reflect the quality of the transmitted picture. Similarly, symptoms shown are assumed and are not indicative of the quality and workmanship of this receiving equipment.



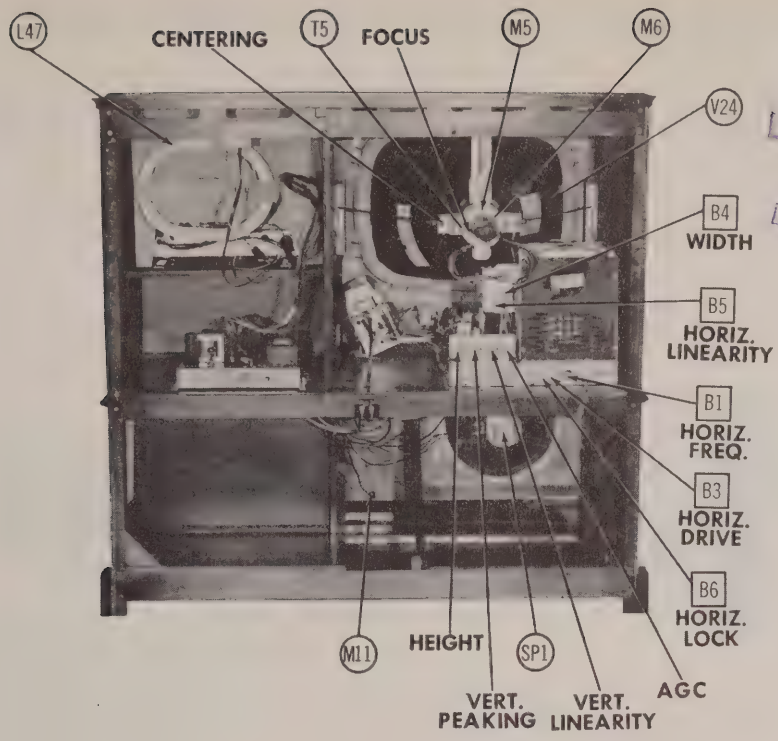
TV CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL FREQUENCY ADJUSTMENT

Turn the set on and tune in a TV station, preferably a test pattern.

If the picture cannot be synchronized horizontally with the horizontal hold control, adjust the horizontal frequency slug (B1) until the picture will synchronize. If picture still will not synchronize adjust the horizontal waveform slug (B2) several turns out of the coil and readjust B1 to synchronize the picture.

If picture width or linearity is incorrect adjust the horizontal drive trimmer (B3), the width control slug (B4) and the horizontal linearity control slug (B5) for proper results.

HORIZONTAL WAVEFORM ADJUSTMENT

The horizontal waveform adjustment is made at the factory and normally will not require readjustment. B1 and B2 are adjusted simultaneously while watching the picture.

Set the horizontal hold control fully clockwise.

Turn B1 until picture falls out of sync and one diagonal black bar sloping down to the right appears on the screen. Turn B2 clockwise, at the same time adjusting B1 to maintain one bar on the screen.

Continue adjusting B1 and B2 in such manner until the oscillator begins to motorboat, then adjust B2 counter clockwise until the motorboating stops. To check adjustment turn B1 until the picture synchronizes then reverse the direction of core rotation until the picture falls out of sync with diagonal bars sloping down to the right.

Continue to turn B1 in the same direction.

Additional bars should not appear on the screen.

Instead, the horizontal oscillator should start to motorboat. Retouch B2 until this condition is obtained. To observe the horizontal waveform connect the low capacity probe of an oscilloscope to terminal C of L39.

Turn the horizontal hold 1/4 turn from counter clockwise so that the picture is in sync.

The waveform on the scope should appear as in Fig. 8. Adjust B2 for broad and narrow peaks of equal height. If necessary while adjusting B2 keep the picture in sync. with the horizontal hold control.

HORIZONTAL LOCKING RANGE ADJUSTMENT

With the horizontal hold control in full counter clockwise position momentarily interrupt the signal by switching off channel and back.

If the picture remains in sync turn B1 slightly and again switch off channel, repeating until picture loses sync, with diagonal lines sloping down to the left. Slowly turn the horizontal hold control clockwise and note the least number of bars obtained just before the picture pulls into sync. If the number is more than 2 adjust the horizontal locking trimmer (B6) slightly clockwise. If the number is less than 2 adjust B6 counter clockwise.

Recheck as above for the least number of bars and readjust B6, if necessary, until 2 bars are present. Turn the horizontal hold control fully clockwise and adjust B1 until the diagonal bar sloping down to the right appears on the screen, then reverse the direction of adjustment of B1 until the diagonal bar just disappears, leaving the picture in synchronization.

AGC CONTROL ADJUSTMENT

This control is adjusted at the factory and normally should not require readjustment. To check the operation of the control tune in a strong signal and synchronize the picture. Momentarily switch to another channel and back again. If the picture reappears immediately the receiver is not overloading due to improper setting of the control. If the picture requires an appreciable portion of a second to reappear, or distorts, the control should be readjusted.

Turn the control fully counter clockwise.

The raster may be bent slightly, but this should be disregarded. Turn the control clockwise until there is a very slight bend or change of bend in the picture.

Then turn the control counter clockwise just enough to remove the bend or change in bend.

If the signal is too weak to cause the picture to bend turn the control clockwise until snow in the picture becomes more pronounced, then counter clockwise until best signal to noise ratio is obtained.

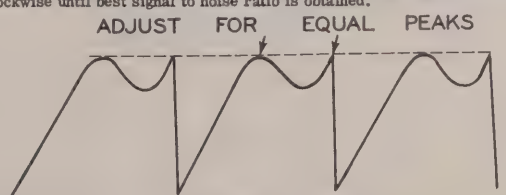
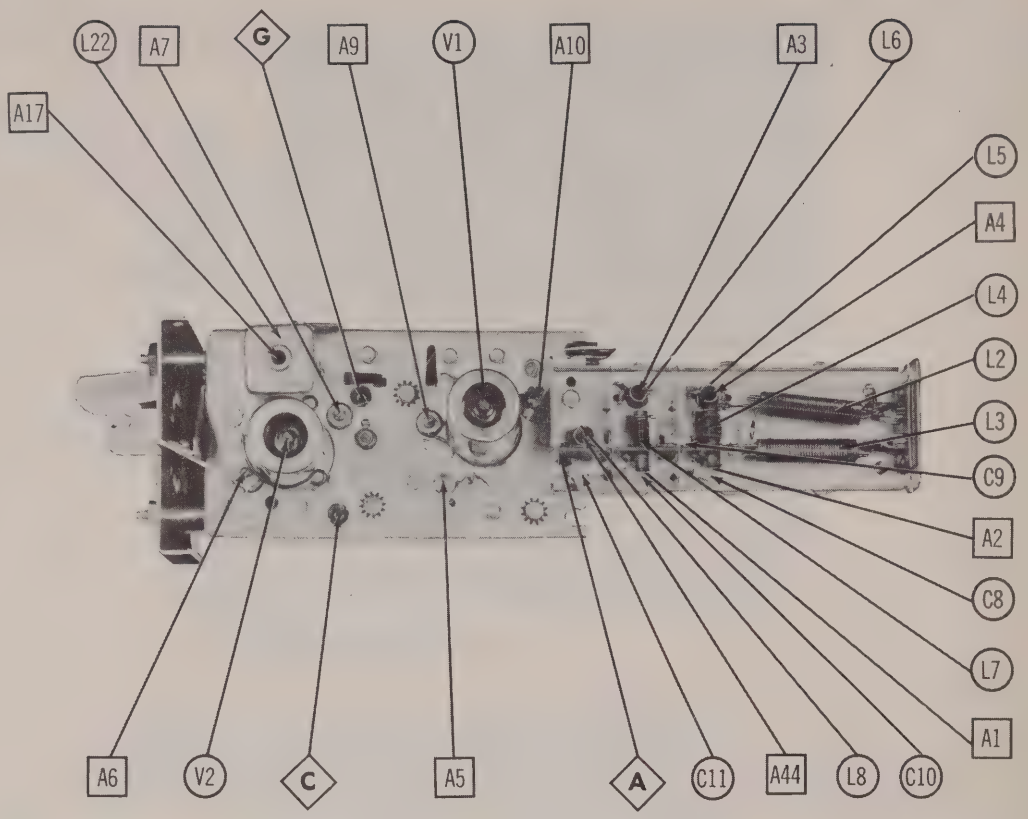
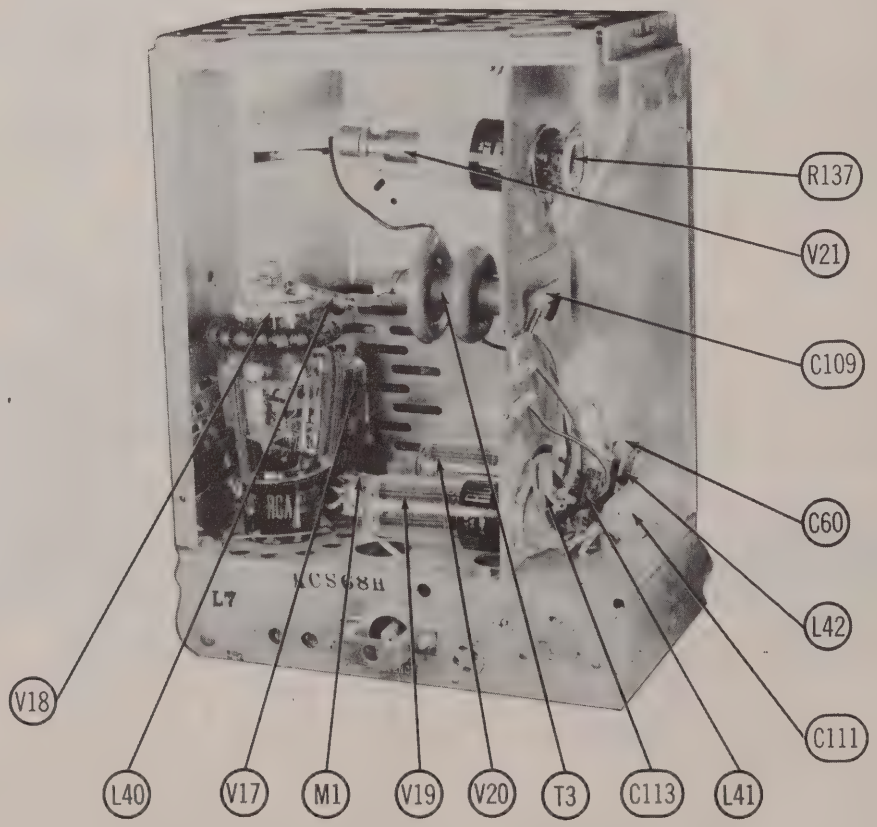


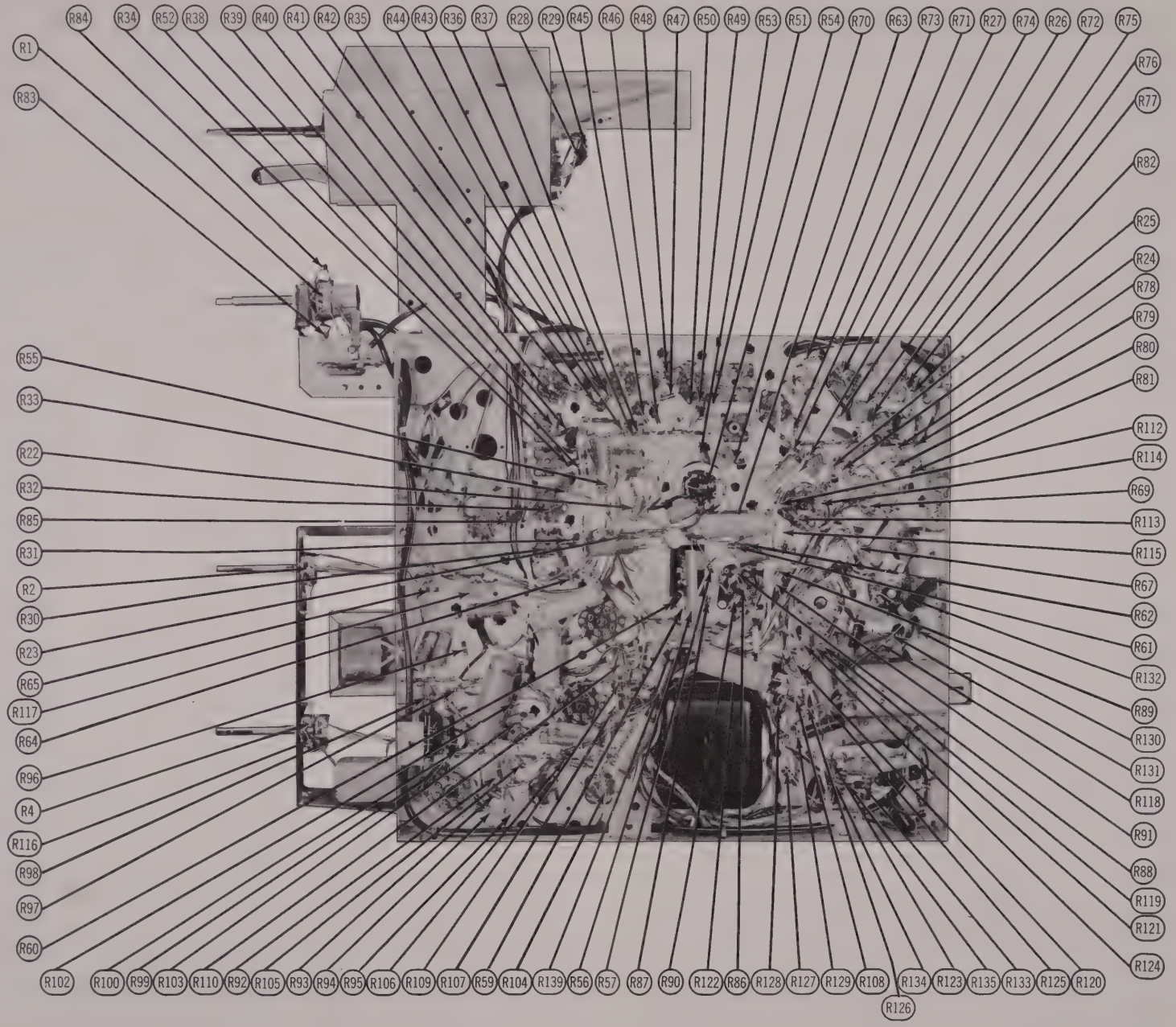
FIG. 8



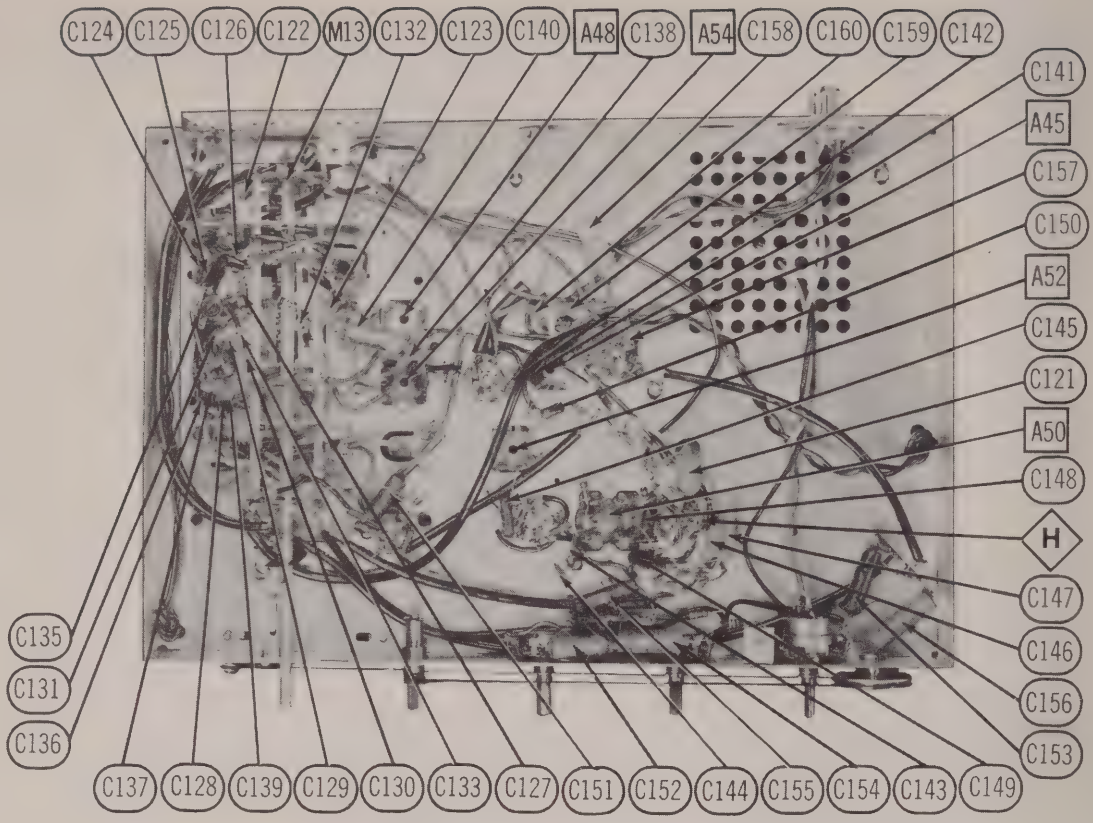
RF TUNER – TOP VIEW



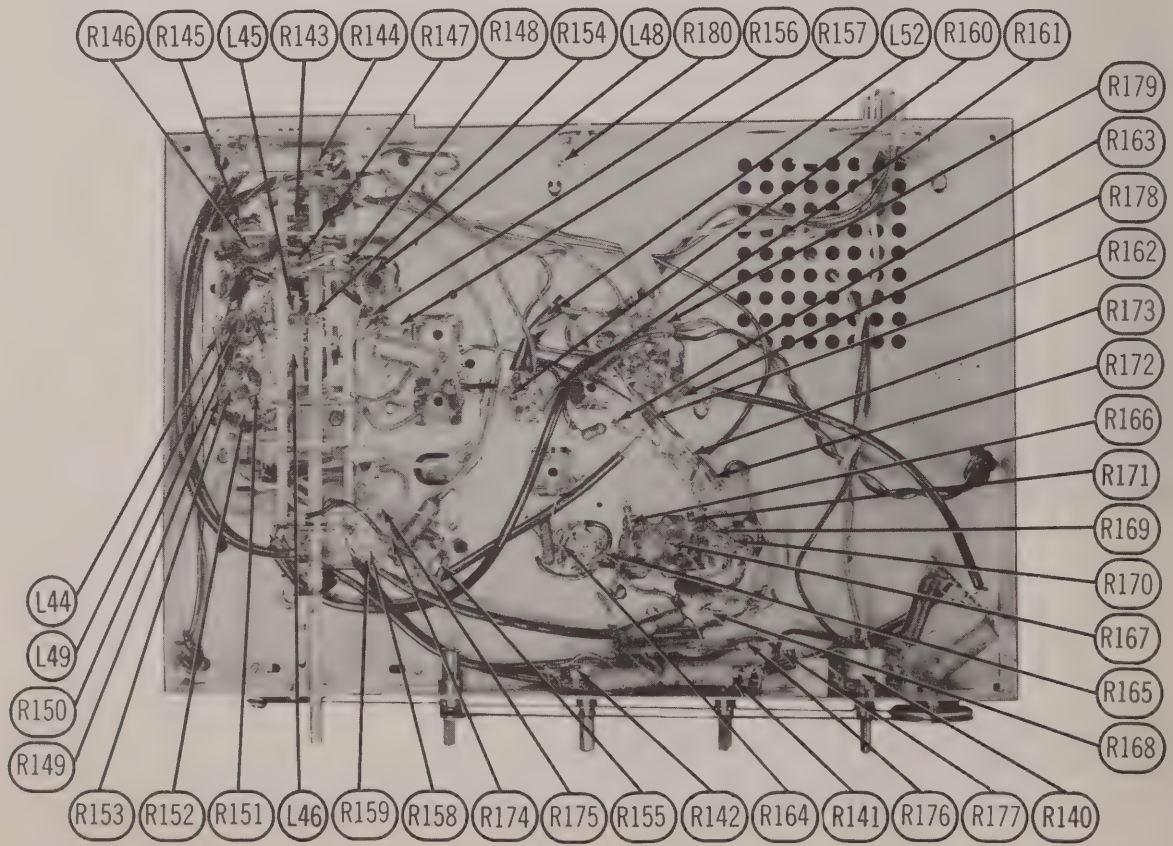
HIGH VOLTAGE COMPARTMENT



TV CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



RADIO CHASSIS-BOTTOM VIEW



RADIO CHASSIS-BOTTOM VIEW

TV PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: RCA Victor PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1	RF Amplifier	6BQ7	6BQ7	9AJ	
V2	Converter	6X8	6X8	9AK	
V3	1st. Video IF Amp.	6AU6	6AU6	7BK	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	4th. Video IF Amp.	6CB6	6CB6	7CM	
V7	Video Output	6AG7	6AG7	8Y	
V8	AGC Keying	6CB6	6CB6	7CM	
V9	1st. Sound IF Amp.	6AU6	6AU6	7BK	
V10	Limiter	6AU6	6AU6	7BK	
V11	Ratio Detector	6AL5	6AL5	6BT	
V12	AF Amplifier-AGC Clamper	6AV6	6AV6	7BT	
V13	Horiz. Sync Sep.-Vert. Sync Sep.	6SN7GT	6SN7GT	8BD	
V14	Vert. Sync Amp.-Vert. Oscillator	6SN7GT	6SN7GT	8BD	
V15	Vert. Output	6AQ5	6AQ5	7BZ	
V16	Horiz. Sync Amp.	6SN7GT	6SN7GT	8BD	
V17	Horiz. AFC-Horiz. Oscillator	6SN7GT	6SN7GT	8BD	
V18	Horiz. Output	6CD6G	6CD6G	5BT	
V19	Damper	6W4GT	6W4GT	4CG	
V20	Damper	6W4GT	6W4GT	4CG	
V21	HV Rectifier	1B3GT	1B3GT	3C	
V22	LV Rectifier	5U4G	5U4G	5T	
V23	LV Rectifier	5U4G	5U4G	5T	

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[illegible] COLORADO

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: RCA Victor PART No.	REPLACEMENT DATA: SYLVANIA PART No.	REPLACEMENT DATA:	RTMA BASE TYPE	NOTES
V24	21AP4	21AP4		12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲35	450	75510	AFH4-16		D015		FP445	TVL-4771	
B	▲10	450								
C	5	450								
D	■35	450								
C2A	▲35	450	77474	AFH4-82		D104		FP375	TVL-4714	
B	■25	450								
C	▲100	50								
C3A	▲35	450	75510	AFH4-16		D015		FP445	TVL-4771	
B	■35	450								
C	▲10	450								
D	5	450								
C4	5	450	28417	PRS450/4		BR445		TC70	TVA-1702	
C5	2	10	76742	PRS150/4		BBR-2-50T		TC302	TVA-1201	
C6	2	10	76742	PRS150/4		BBR-2-50T		TC302	TVA-1201	
C7	5	50	74521	PRS150/4		BR550		TC30	TVA-1303	
C8	18		54207		TCZ-18		NP0K-180			
C9	5		93056	SI5NP0	TCZ-4.7		NP0K-050	ZT-555	5TCCB-V47	
C10	27		70935	SI27NP0	TCZ-27		NP0K-270			
C11	33		76739	SI33NP0	TCZ-33		NP0K-330	ZT-5433	5TCC-Q33	
C12	22		76557	SI22NP0	TCZ-22		NP0K-220		5TCC-Q22	
C13	1500		73748	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C14	1-4		76532		829-4			CT551		
C15	1500		75166							
C16	1500		73748	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C17	8		70597							
C18	1500		73748	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C19	1500		75166							
C20	270		75199	SI270	D6-271		GP2K-271	UC-5327	5GA-T27	
C21	270		75199	SI270	D6-271		GP2K-271	UC-5327	5GA-T27	
C22	220		77460	SI220	D6-221		GP2K-221	UC-5322	5GA-T22	
C23	1500		75166							
C24	5		93056	SI5NP0	TCZ-4.7		NP0K-050	ZT-555	5TCCB-V47	
C25	22		76557	SI22NP0	TCZ-22		NP0K-220		5TCC-Q22	
C26	10		55326	SI10N080			N080-331-100			
C27	22		76558	SI22NP0	TCZ-22		NP0K-220		5TCC-Q22	
C28	.68		71088		TCZ-.68		NP0K-R68			
C29	.8-3		77151		829-3			CT565A		
C30	1500		75166	CS-1500						
C31	1500		75166	CS-1500						
C32	1500		75610	SI1500	D6-152	TM5D15	801-0015	DC-5215	5HK-D15	
C33	1500		75166	CS-1500						
C34	4700		73473	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C35A	4700		76470	BPD-2X0047	DD-2-502	TM5D5	811-005	DC-525	5HK-2D47	
B	4700					TM5D5	811-005	DC-525		
C36A	4700		76470	BPD-2X0047	DD-2-502	TM5D5	811-005	DC-525	5HK-2D47	
B	4700					TM5D5	811-005	DC-525		
C37	.047	400	73553	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C38	4700		73473	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C39	4700		73473	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C40	4700		73473	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C41	4700		73473	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C42	4700		73473	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C43	10000		73960	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C44A	4700		76470	BPD-2X0047	DD-2-502	TM5D5	811-005	DC-525	5HK-2D47	
B	4700					TM5D5	811-005	DC-525		
C45	4700		73473	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C46A	4700		76470	BPD-2X0047	DD-2-502	TM5D5	811-005	DC-525	5HK-2D47	
B	4700					TM5D5	811-005	DC-525		
C47	4700		73473	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	

TV PARTS LIST AND DESCRIPTIONS (Continued)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C48	1500		75166	CS-1500						
C49	4700		73473	BPD-0047	DD-502	TMSD5	811-005	DC-525	5HK-D47	
C50A	5000	}	76470	BPD-2X005	DD-2-502	TMSD5	811-005	DC-525	5HK-2D5	
B	5000					TMSD5	811-005	DC-525		
C51	10000		73960	BPD-01	DD-103	TM581	821-01	DC-511	5HK-S1	
C52	.0047	600	73920	P688-0047	D6-472	PTE6D47	GP1K-470	UC-5447	5GA-Q47	
C53	47		39042	S147	D6-470		GP1K-150	UC-5415	5GA-Q15	
C54	15		39044	S115	D6-150			PT4025	4TM-P22	
C55	.22	400	73794	P488-22		PTE4P22		PT6247	6TM-D47	
C56	10000		73960	BPD-01	DD-103	TM581	821-01	DC-511	5HK-S1	
C57	.1	400	73551	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C58	.0047	600	73920	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C59	10000		73960	BPD-01	DD-103	TM581	821-01	DC-511	5HK-S1	
C60	39		76574					MCK310		
C61	100	1000	76578					DC-511	5HK-S1	
C62	10000		73960	BPD-01	DD-103	TM581	821-01	DC-511	5HK-S1	
C63A	10000	}	75877	BPD-2X01	DD-3-103	TM5D81	821-01	DC-511	5HK-2S1	
B	10000						821-01	DC-511		
C64	56		71924	SI156	D6-560		GP1K-560	UC-5456	5GA-Q56	
C65A	10000	}	75877	BPD-2X01	DD-3-103	TM5D81	821-01	DC-511	5HK-2S1	
B	10000						821-01	DC-511		
C66	1-4		76800					MCB245	MS-35	
C67	470	500	54003	1469-0005		SR575		MCB245	MS-35	
C68	470	500	54003	1469-0005		SR575		MCB245	MS-35	
C69	.0033	600	73595	P688-0022	D6-222	PT6222	GP2-333-222	PT6222	6TM-D22	
C70	.0018	600	77468	SI1800	D6-182		GP2-333-182		5HK-D18	
C71	.015	200	73797	P288-015		PTE6S15		TP400	6TM-S15	
C72	.01	400	73581	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C73	.0047	600	73920	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C74	.022	200	73562	P488-022		PTE4S22		PT4122	4TM-S22	
C75	.022	200	73562	P488-022	DF-203	PTE4S22		PT4122	4TM-S22	
C76	.001	600	75643	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C77	.001	600	75643	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C78	150		44202	SI150	D6-151	TM5T15	GP2K-151	UC-5315	5GA-T15	
C79	100		39396	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C80	.01	400	73581	P488-01	DF-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C81	.0022	600	73595	P688-0022	D6-222	PTE6D22	GP2-333-222	PT6222	6TM-D22	
C82	.0047	600	73920	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C83	.01	600	73594							
C84	.047	600	73592	P688-047		PTE6S47		PT6147	6TM-S47	
C85	.22	600	74957	684-25		PTE6P25		PT6025	6TM-P22	
C86	.0022	1000	73803	P1088-0022		PTE16D22		PT16222	MB-D22	
C87	.022	400	73562	P488-022		PTE4S22		PT4122	4TM-S22	
C88	.022	400	73562	P488-022		PTE4S22		PT4122	4TM-S22	
C89	.1	600	73557	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C90	.022	600	73798	P688-022	DF-203	PTE6S22		PT6025	6TM-S22	
C91	.1	400	73551	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C92	.01	400	73561	P488-01	D6-103	PTE4S1	GP2L-102	PT621	6TM-D1	
C93	.001	600	75643	P688-001	D6-102	PTE6D1	GP1K-101	UC-531	5GA-T1	
C94	100		39396	SI100	D6-101	TM5T1	GP2K-151	UC-5315	5GA-T15	
C95	150		44202	SI150	D6-151	TM5T15				
C96	82	1000	76474					PT6147	6TM-S47	
C97	.047	600	73553	P688-047	DF-503	PTE6S47				
C98	82	1000	76474					PT4147	4TM-S47	
C99	.047	400	73553	P488-047	DF-503	PTE4S47		PT4122	4TM-S22	
C100	.022	400	73562	P488-022	DF-203	PTE4S22		PT405	2TM-P47	
C101	.47	200	73878	P288-47		PJ2P5				
C102	270	1000	76579					PT6025	6TM-S22	
C103	.01	600	73594					PT1621	MB-D1	
C104	.0015	600	76508			PTE16D1		PT6147	6TM-S47	
C105	.001	1000	75643	P1088-001		PTE6S15		PT405	2TM-P47	
C106	.047	600	73592	P688-047		PJ2P5				
C107	.47	200	73787	P288-47					60GAB-Q33	
C108	.068	1000	73815							
C109	33	6000	76577	HVD60-33						
C110	180	3500	76575							
C111	.068	1000	73815							
C112	.47	200	73787	P288-47		PJ2P5		PT405	2TM-P47	
C113	150	2000	76576	HVD60-150					20GAB-T15	
C114	.01	400	73561	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C115	500	30000	76488							
C116	56									
C117	10									
C118	.047	400	75081	1892X-05		PJ4147		PT4147	4TM-S47	
C119	.047	400	75081	1892X-05		PJ4147		PT4147	4TM-S47	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RCA Victor PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2.5Meg	½	77473	*				Tone-Panel
B	1.5Meg	½						Volume & Sw.-Tap② 250KΩ & 500KΩ-Rear
R2	200KΩ	½	76444	QJ-325**				Brightness
R3	15KΩ	½	76445	Q13-118XX				Contrast Tap③ 5 KΩ & 10KΩ
R4A	820KΩ	½	77201	QJ-378 †				Vert. Hold-Panel
B	75KΩ	½						Horiz. Hold - Rear
R5A	2.5Meg	½	76448	Q11-239	AG-84-S	AB-83	SU-565	Height
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R5A
R6A	10KΩ	½	76497	Q11-116	AG-27-S	AB-14	SU-20	Vert Peaking
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R6A
R7A	1500Ω	½	76449	Q11-110	AG-11-S	AB-6	U -6	Vert. Linearity
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R7A
R8A	50KΩ	½	76447	Q11-123	AG-44-S	AB-31	SU-35	AGC
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R8A

* CONCENTRIKIT EQUIVALENT-KIT K-2, BASE ELEMENTS & SHAFTS B11-239 & P1-128 (Panel) B18-139XX & R1-216 (Rear) & SWITCH 76-1.

** CONCENTRIKIT EQUIVALENT-KIT K-2, BASE ELEMENTS & SHAFTS B11-129 & P1-200 (Panel) Rear (None) & R5-215).

† CONCENTRIKIT EQUIVALENT-KIT K-2, BASE ELEMENTS & SHAFTS B11-137 & P1-200(Panel) B11-125 & R1-216 (Rear).

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA RCA Victor PART No.	IRC PART No.	NOTES
R9	3600Ω-5%	½		BTS-3600-5%	
R10	150Ω	½	504115	BTS-150	
R11	3300Ω	½	503233	BTS-3300	
R13	47Ω	½	503047		
R13	82Ω	½	503082	BTS-82	
R14	470KΩ	½	504447		
R15	1000Ω	½	504210	BTS-1000	
R16	1000Ω	½	504210	BTS-1000	
R17	100KΩ	½	504410		
R18	100KΩ	½	504410		
R19	3300Ω	½	503233	BTS-3300	
R20	100KΩ	½	504410		
R21	4700Ω	½		BTS-4700	
R22	3.3Meg-5%	1	512533	BTA-3.3Meg-5%	
R23	10KΩ	½	503210	BTS-10K	
R24	220KΩ-5%	½	502422	BTS-220K-5%	
R25	150KΩ	½	503415	BTS-150K	
R26	10KΩ	½	503310	BTS-10K	
R27	56KΩ-5%	½	502356	BTS-56K-5%	
R28	100Ω	½	503110	BTS-100	
R29	100Ω	½	503110	BTS-100	
R30	1000Ω	½	503210	BTS-1000	
R31	1000Ω	½	503210	BTS-1000	
R32	100Ω-5%	½	502110	BTS-100-5%	
R33	33KΩ	½	503333	BTS-33K	
R34	1000Ω	½	503210	BTS-1000	
R35	8.2Meg	½	503610	BTS-8.2Meg	
R36	120KΩ	½	503412	BTS-120K	
R37	47KΩ	½	503347	BTS-47K	
R38	33KΩ	½	503333	BTS-33K	
R39	1000Ω	½	503210	BTS-1000	
R40	56Ω-5%	½	502056		
R41	33KΩ	½	503333	BTS-33K	
R42	1000Ω	½	503210	BTS-1000	
R43	5600Ω-5%	½	502256		
R44	68Ω-5%	½	34763		
R45	10KΩ	½	503310		
R46	2200Ω	½	503222	BTS-2200	
R47	56KΩ-5%	½	502356		
R48	180Ω	½	503118	BTS-180	
R49	39KΩ	½	503339		
R50	8200Ω	½	503282	BTS-8200	
R51	6800Ω	1	513268	BTA-6800	
R52	10KΩ	2	523310	BTB-10K	
R53	3900Ω-5%	½	502239	BTS-3900-5%	
R54	47Ω	½	503047		
R55	220Ω	½	503123	BTS-220	
R56	6750	10	76642		
R57	18KΩ	½	503318	BTS-18K	
R58	680Ω	½	503168	BTS-680	
R59	5600Ω	1	513256	BTA-5600	
R60	10KΩ	1	513310	BTA-10K	
R61	150KΩ	½	503415	BTS-150K	
R62	1000Ω	½	503210	BTS-1000	
R63	470KΩ	½	503447	BTS-470K	
R64	150KΩ	½	503415	BTS-150K	
R65	100KΩ	½	503410	BTS-150K	
R66	270KΩ	½	503427	BTS-270K	
R67	27KΩ	½	503327	BTS-27K	
R68	100KΩ-5%	½	502410	BTS-100K-5%	
R69	150KΩ	½	503415	BTS-150K	
R70	470KΩ	½	503447		
R71	82Ω-5%	½	502082	BTS-82 -5%	
R72	1000Ω	½	503210	BTS-1000	
R73	47KΩ	½	503347		
R74	56KΩ	1	513356		
R75	33KΩ	½	503333	BTS-33K	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA RCA Victor PART No.	IRC PART No.	NOTES
R76	1000Ω	½	503210	BTS-1000	
R77	47Ω	½	503047		
R78	1200Ω-5%	½	502212	BTS-1200-5%	
R79	10000-5%	½	502210	BTS-1000-5%	
R80	6800Ω-5%	½	14659	BTS-6800-5%	
R81	6800Ω-5%	½	14659	BTS-6800-5%	
R82	39KΩ-5%	½	503339	BTS-39K-5%	
R83	27KΩ	½	503327	BTS-27K	
R84	15KΩ	½	503315	BTS-15K	
R85	10Meg	½	503610	BTS-10Meg	
R86	220KΩ	½	503422	BTS-220K	
R87	1200Ω	½	503212	BTS-1200	
R88	150KΩ	½	503415	BTS-150K	
R89	8.2Meg	½	503582	BTS-8.2Meg	
R90	680KΩ	½	503468	BTS-680K	
R91	470KΩ	½	503447	BTS-470K	
R92	470KΩ	½	503447	BTS-470K	
R93	1.5Meg	½	503515	BTS-1.5Meg	
R94	220KΩ	½	503422	BTS-220K	
R95	22KΩ	½	503322	BTS-22K	
R96	22KΩ	½	503322	BTS-22K	
R97	22KΩ	½	503322	BTS-22K	
R98	8200Ω	½	503282	BTS-8200	
R99	1 Meg	½	503510	BTS-1 Meg	
R100	820KΩ	½	503482	BTS-820K	
R101	1 Meg	½	503510	BTS-1 Meg	
R102	10KΩ	½	503310	BTS-10K	
R103	3.3Meg	1	513533	BTA-3.3Meg	
R104	1200Ω	1	513212	BTA-1200	Note
R105	68KΩ	1	513368	BTA-68K	
R106	470Ω	½	503147	BTS-470	
R107	220KΩ	½	503422	BTS-220K	
R108	150KΩ	½	503415	BTS-150K	
R109	10KΩ	½	503310	BTS-10K	
R110	3300Ω	½	503233	BTS-3300	
R111	560Ω	1		BTS-560	
R112	1 Meg	1	503510	BTS-1 Meg	
R113	12KΩ	1	513312	BTA-12K	
R114	3.9Meg	1	503539	BTS-3.9Meg	
R115	820Ω	½	503182	BTS-180	
R116	56KΩ	1	513356	BTA-56K	
R117	47KΩ	1	513347	BTA-47K	
R118	150KΩ	½	503415	BTS-150K	
R119	330KΩ	½	503433	BTS-330K	
R120	820KΩ	½	503482	BTS-820K	
R121	68KΩ	1	513368	BTA-68K	
R122	150KΩ-5%	1	512415	BTA-150K-5%	
R123	3900Ω	½	503239	BTS-3900	
R124	68KΩ-5%	1	512368	BTA-68K-5%	
R125	10KΩ	1	513310	BTA-10K	
R126	18K	½	503318	BTS-18K	
R127	56KΩ-5%	1	512356	BTA-56K-5%	
R128	390KΩ	½	503439	BTS-56K-5%	
R129	330KΩ	½	503433	BTS-330K	
R130	1 Meg	½	503510	BTS-1 Meg	
R131	47Ω	½	503047		
R132	100Ω	2	74015	BW-2-100	
R133	8200Ω	2	523282	BTB-8200	
R134	8200Ω	2	523282	BTB-8200	
R135	82KΩ	1	513382	BTA-82K	
R136	200Ω	5	76682		
R137	1.5Ω	½	76468		
R138A	950Ω	16			
B	450Ω	6			
C	1500Ω	5	77472		
D	1200Ω	1			
E	10KΩ	5			
R139	18KΩ	10	76265	1 3/4A-18K	

Note . Some models use a 1000Ω resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA RCA Victor PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.
T1	117VAC @3.5A	700VCT .290ADC	5VAC @6A	6.3VAC @1.5A	76495				TP-358	
			SEC. 4	SEC. 5						
			6.3VAC @2.4A	6.3VAC @9.5A						

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA RCA Victor PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.	NOTES
T2	165Ω	1310Ω	74144	A-8122	A-4003	TBO-2	A-97Y		Vert. Osc. Trans.
T3	301Ω tap @16Ω	0Ω	76501 ①						Horiz. Output Trans.
T4	620Ω	.6Ω	76494	A-8140 ②	A-3080②	TSO-6 ②	A-103X ②		Vert. Output Trans.
T5A	25Ω		76653 ③						Horiz. Deflection Coils
B	3.3Ω				MWC-2⑤	TL-3 ⑥	WC-11⑦		Vert. Deflection Coils
T6	12Ω		76483						Horiz. Lin. Coil
T7	120Ω		76484						Width Coil

① Does not include Filament winding.
② Drill new mounting holes.
③ Includes 6 contact male connector
④ Enlarge mounting hole.
⑤ Do not use tap
⑥ Connect to coded green & black dot terminals.

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE @ CURRENT 1000 (AC)	REPLACEMENT DATA RCA Victor PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L1	.275ADC	39Ω	1.24 Hy.	76498	C-2326 ①	C-2996 ①	TR-1733 ①	C-23X ①

① Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA RCA Victor PART No.	MEISSNER PART No.	MERIT PART No.	WILLER PART No.	NOTES
L2	Ant. Trans.	.5Ω	.5Ω	73591				
L3	Ant. Trans.	.5Ω	.5Ω	73591				
L4	IF Trap	0Ω		76542				Includes core
L5	Ant.Shunt Coil	0Ω		76538				Includes core
L6	Ant. Shunt Coil	0Ω		76537				Includes core
L7	IF Trap	0Ω		76541				Includes core
L8	FM Trap	0Ω		76540				Includes core, core part #76543
L9	Ant. Coils	0Ω		76556				Includes stator complete with rotor, coils, C12, R11 and R9.
L10	Ant. Shunt Coils	0Ω		76554				Includes stator complete with rotor, coils, & C13 Channel 13
L11	Ant. Coil	0Ω		76581				
L12	Fil. Choke	0Ω		73477				
L13	IF Trap	0Ω		76535				
L14	Neutr.Coil	0Ω		76562				
L15	RF Coil	0Ω		76553				Includes stator complete rotor, coils, C20 & R16 Channels 13, part # includes 8 3.8MMF Cap.
L16	RF Coil	0Ω		76529				
L17	Mixer Grid Coils	0Ω		77353				Includes stator complete with rotor, coils, C21, C22, R17, R18 & R19
L18	Osc. Coils	0Ω		77205				Includes stator complete with rotor, coils, C26 & C28
L19	Fil. Choke	0Ω		76763				
L20	Fil. Choke	0Ω		76763				
L21	Fil. Choke	0Ω		77206				
L22	Conv.Plate	.1Ω	.1Ω	77148			6215	Includes 2.2KΩ resistor
L23	RF Choke	.1Ω		77153				
L24	1st.Video IF Grid	.2Ω	.2Ω	77198	17-4531		6216	Includes trap & 5.6KΩ resistor
L25	1st.Video IF Plate	.2Ω		77197			6217	Includes trap, also includes 4.7KΩ resistor & 100MMF capacitor
L26	2nd.Video IF Grid	.2Ω		76435			6218	Includes trap
L27	Fil. Choke	0Ω		73477			4604	1.36 Microhenries
L28	3rd.Video IF	.2Ω	.2Ω	76433	17-4522		6219	
L29	4th.Video IF	.2Ω	.2Ω	76433	17-4523		6219	
L30	5th.Video IF	.2Ω	.2Ω	76436				Includes 10KΩ resistor, IN64 crystal detector, & 36 Microhenries series peaking coil
L31	Series Peaking Coil	5.2Ω		76646	19-3075 *	TV-181 *	6172 *	72 Microhenries, wound on 3.3KΩ resistor
L32	Shunt Peaking Coil	11Ω		75252	19-3500	TV-188	6174	500 Microhenries
L33	4.5MC Trap	2.1Ω		76482	20-1004	TV-151 ■	1470■	Wound on 47MMF capacitor
L34	Shunt Peaking Coil	15Ω		75252	19-3500	TV-188	6174	500 Microhenries
L35	Series Peaking Coil	6.5Ω		76647	19-4180	TV-183	6179	180 Microhenries, wound on 22KΩ resistor Tapped ⓐ 1.5Ω
L36	1st.Sound IF	6.7Ω		76437	17-1025			
L37	2nd.Sound IF	5.5Ω	3.3Ω	76438	16-3445	TV-113 ▲	1466 †	
L38	Ratio Det.	4.2Ω	.1Ω CT	76439	17-1033	TV-110	1468 †	Tertiary Winding .5Ω
L39	Horiz. Osc.	75Ω		76440	20-1402	TV-162	6183	Tapped ⓐ 52Ω, horiz.waveform winding -42Ω
L40	RF Choke	2.8Ω		76510			4608	4.7 Microhenries
L41	RF Choke	.72Ω		76640			4604	1.5 Microhenries
L42	RF Choke	.72Ω		76640			4604	1.5 Microhenries

* Parallel with 3.3KΩ resistor
■ Drill mounting hole.
† Drill new mounting holes
▲ Use adaptor plate.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA RCA Victor PART No. FUSE	RCA Victor PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG P/T	1/4A 250V	73600		318.250 (3AG-1/4A P/T)		GJV-1/4	

MISCELLANEOUS

ITEM No.	PART NAME	REPLACEMENT DATA RCA Victor PART No.	NOTES
M2	Pilot Light	11765	Type #51
M3	Tuner	76554	RF Unit Assemblies
M4	Crystal	76675	Video Detector Crystal Rectifier (1N64)
M5	Focus Magnet	76652	
M6	Ion Trap Magnet	76141	
A28	Trimmer Capacitor	76800	Ratio Detector Balance 1-4MMF
A43	Trimmer Capacitor	71496	IF Link 5-70MMF
B3, B6	Trimmer Capacitor	75217	Horiz. Locking Range, Horiz. Drive, 10-160MMF (Dual)
	Cabinet Back Cover	77480	Including Power Cord
	Escutcheon	75456	Channel marker escutcheon
	Mask	75459	Channel Marker Escutcheon Light Mask-Burgundy
	Mask	76696	Polystrene Masking Panel
	Safety Glass	76622	
	Knob	76595	Brightness Control-Vertical Hold control or TV Tone
	Knob	74963	Picture control, Horiz. Hold control, or TV volume control & Off/On Switch (Maroon)(Inset)
	Knob	76593	TV Channel Selector -Maroon (Inner)
	Knob	76591	TV Fine Tuning - Maroon (outer)

RCA VICTOR MODEL 21-T-197DE
(Ch. KCS68A, Radio Ch. RC1111A & Audio Ch. RS141A)

RADIO PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: RCA Victor PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V25	RF Amplifier	6CB6	6CB6	7CM	
V26	Converter	6J6	6J6	7BF	
V27	FM-AM-IF Amp.	6BA6	6BA6	7BK	
V28	Driver	6AU6	6AU6	7BK	
V29	Ratio Detector	6AL5	6AL5	6BT	
V30	AM Detector-AVC-AF Amp.	6AV6	6AV6	6BT	
V31	Phase Inverter	6C4	6C4	6BG	
V32	Audio Output	6V6GT	6V6GT	7S	
V33	Audio Output	6V6GT	6V6GT	7S	
V34	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C120A	30	450	77324	PRS450/30-30		C103		3N539	R1326	Red
B	30	350						TC22		Green
C	40	25		PRS50/50						Blue
C121	2	50	73747	PRS150/4		BBR-2-50T		TC302	TVA-1301	
C122	220		75611	SI220	D6-221		GP2K-221	UC-5322	5GA-T22	
C123	4700		73473	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C124	4700		73473	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C125	4700		73473	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C126	100		39396	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C127	470	500	39644	1469-0005		5R5T5		MCB245	MS-35	
C128	4700		73473	BPD-0047	MD-502	TM5D5	811-005	DC-525	5HK-D47	
C129	6.8		77352							
C130	68		75612	SI68N750	TCN-68		N750L-680		5TCU-Q68	
C131	15		39044	SI15N750	TCN-15		N750K-150	NT-5415	5TCU-Q15	
C132	68		75612	SI68NP0	TCZ-68		NP0L-680	ZT-5468	5TCC-Q68	
C133	150		75614							
C134	5		75613							
C135	4700		73473	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C136	47		76348	SI47	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C137	5		75613	SI5N750	TCN-5		N750K-050	NT-555	5TCUB-V5	
C138	4700		73473	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C139	4700		73473	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C140	.047	200	73558	P288-047	DF-503	PTE4S47		PT4147	2TM-S47	
C141	4700		73473	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C142	4700		73473	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C143	4700		73473	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C144	4700		73473	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C145	.005	200	72490	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C146	330	500	39640	1469-00035						
C147	330	500	39640	1469-00035						
C148	.005	200	72490	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C149	4700		73473	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C150	150		75614	SI150	D6-151	TM5T15	GP2K-151	UC-5315	5GA-T15	
C151	.0018	600	77468	SI1800	D6-182		GP2-333-182	UC-5418	5HK-D18	
C152	.0047	400	73920	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C153	.0033	400	73795	P688-0033	D6-332	PTE6D33	GP2-333-332	PT6233	6TM-D33	
C154	.018	200	77469							
C155	.015	200	73797	P288-015		PTE6S15		TP400	6TM-S15	
C156	.022	400	73562	P488-022	DF-203	PTE4S22		PT4122	4TM-S22	
C157	150		75614	SI150	D6-151	TM5T15	GP2K-151	UC-5315	5GA-T15	
C158	.01	400	73561	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C159	4700		73473	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C160	4700		73473	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C161	.0068	400	73789	P488-0068	D6-682	PTE6D68	GP2-333-682		6TM-D68	
C162	.022	400	73562	P488-022		PTE4S22		PT4122	4TM-S22	
C163	.001	1000	75643	P1088-001		PTE16D1		PT1621	MB-D1	
C164	.001	1000	75643	P1088-001		PTE16D1		PT1621	MB-D1	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	RCA Victor PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R140A	1.5Meg	½	75537	Q18-139XX	AT-95	SBT-222-S	UDT-291	Volume Tap ⓐ 200KΩ & 400KΩ
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	Attach to R140A.
C	Switch			76-1	SW-A	Not Req.	US-26	Attach to R140A.
R141	2 Meg	½	75561	Q17-139		B-77		Bass
R142A	2 Meg	½	75562	Q13-139	AG-66-Z	B-76	U-55	Treble
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R142A .

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	RCA Victor PART No.	IRC PART No.	NOTES
R143	2.2Meg	½	503522	BTS-2.2Meg	
R144	1000Ω	½	503210	BTS-1000	
R145	39Ω	½	503039		
R146	150KΩ	½	503415	BTS-150K	
R147	8200Ω	½	503282	BTS-8200	
R148	680Ω	½	503168	BTS-680	
R149	2.2Meg	½	503522	BTS-2.2Meg	
R150	18KΩ	½	503318	BTS-18K	
R151	100Ω	½	503110		
R152	22KΩ	½	503410	BTS-100K	Note
R153	100KΩ	½	503322	BTS-22K	Note
R154	390Ω	½	503139		
R155	2.2Meg	½	503522	BTS-2.2Meg	
R156	100KΩ	½	503410	BTS-100K	Note
R157	22KΩ	½	503322	BTS-22K	Note
R158	220KΩ	½	503422	BTS-220K	
R159	150KΩ	½	503415	BTS-150K	
R160	68Ω	½	503068		

ITEM No.	RATING OHMS	RATING WATT	RCA Victor PART No.	IRC PART No.	NOTES
R161	22KΩ	½	503322	BTS-22K	
R162	680Ω	½	503168	BTS-680	
R163	56KΩ	½	503356	BTS-56K	
R164	120Ω	½	503112	BTS-120	
R165	22KΩ	½	503322	BTS-22K	
R166	680Ω	½	503168	BTS-680	
R167	100Ω	½	503110	BTS-100	
R168	15KΩ	½	503315	BTS-15K	
R169	1200Ω	½	502212	BTS-1200	
R170	3300Ω	½	502233	BTS-3300	
R171	39KΩ	½	503339	BTS-39K	
R172	430KΩ	½			
R173	22Meg	½	504622	BTS-22Meg	
R174	1.5Meg	½	503515	BTS-1.5Meg	
R175	27KΩ	½	503327	BTS-27K	
R176	27KΩ	½	503327	BTS-27K	
R177	18K	½	503318	BTS-18K	
R178	10Meg	½	503610	BTS-10Meg	

RADIO PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (CONT.)

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	RCA Victor PART No.	IRC PART No.	
R179	270KΩ	1/2	503427	BTS-270K	
R180	1 Meg	1/2	503510	BTS-1 Meg	
R181	3300Ω	1/2	503233	BTS-3300	
R182	68KΩ	1/2	503368	BTS-68K	
R183	82KΩ	1/2	503382	BTS-82K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	RCA Victor PART No.	IRC PART No.	
R184	430KΩ	1/2			
R185	100Ω	1/2	503110	BTS-100	
R186	470KΩ	1/2	503474	BTS-470K	
R187	270Ω	2	522127		
R188	2200Ω	5	73637	1 3/4A-2250	

Note. Some models use a single resistor (120KΩ) in this application.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	RCA Victor PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T8	117VAC @ .725A	640 VCT .080ADC	5VAC @ 2A	6.3VAC @ 3.4A	75566	PM-8410 ①	P-2951	PH-90 ①	R-11B ①

① Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		RCA Victor PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T9	10KΩ CT	3.7Ω	510Ω CT	.6Ω	77323	A-3830 ①	A-2936 ①	RO-110 ①	S-15X ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	RCA Victor PART No.	VIKING PART No.	QUAM PART No.	
SP1	12"	PM	3.7Ω	76093	12J11	12A31	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	RCA Victor PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L43	FM Ant. Coil	0Ω		77313				Tapped
L44	Fil. Choke	0Ω		71942			4602	1.07 Microhenries
L45	FM RF Coil	0Ω		77314				
L46	FM Osc. Coil	0Ω		77315				Tapped
L47	Loop Ant.	.2Ω	1.4Ω	77332				
L48	AM RF Coil	65Ω	3.8Ω	77305				Secondary tapped @ 2.6Ω
L49	AM Osc. Coil	1.2Ω	7.5Ω	75569			71-Osc.	Includes core, pickup winding -2.2Ω
L50	1st. FM IF	.3Ω	.3Ω	75559	16-3487 ▲	FM-251	1451	
L51	1st. AM IF	10.5Ω	10.5Ω	75558				Tertiary Winding -4.6Ω
L52	Fil. Choke	0Ω		71942			4602	1.07 Microhenries
L53	2nd. FM IF	1.2Ω	.4Ω	75560	16-3487 ▲	FM-251	1451	
L54	2nd. AM IF	7Ω	7Ω	76328	16-6770	BC-355	12-C6	
L55	Ratio Det.	1.2Ω	.2ΩCT	73743	17-3488	FM-252	1453	Tertiary Winding -.2Ω

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA						REMARKS
	RCA Victor PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE / NEEDLE	
M7	75475	*9-D	Q Q-33			96-0 / 0-1 or S-1 and 0-3 or S-3	* Complete Arm † Cartridge Assembly

ASTATIC SHURE AND ELECTRO VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

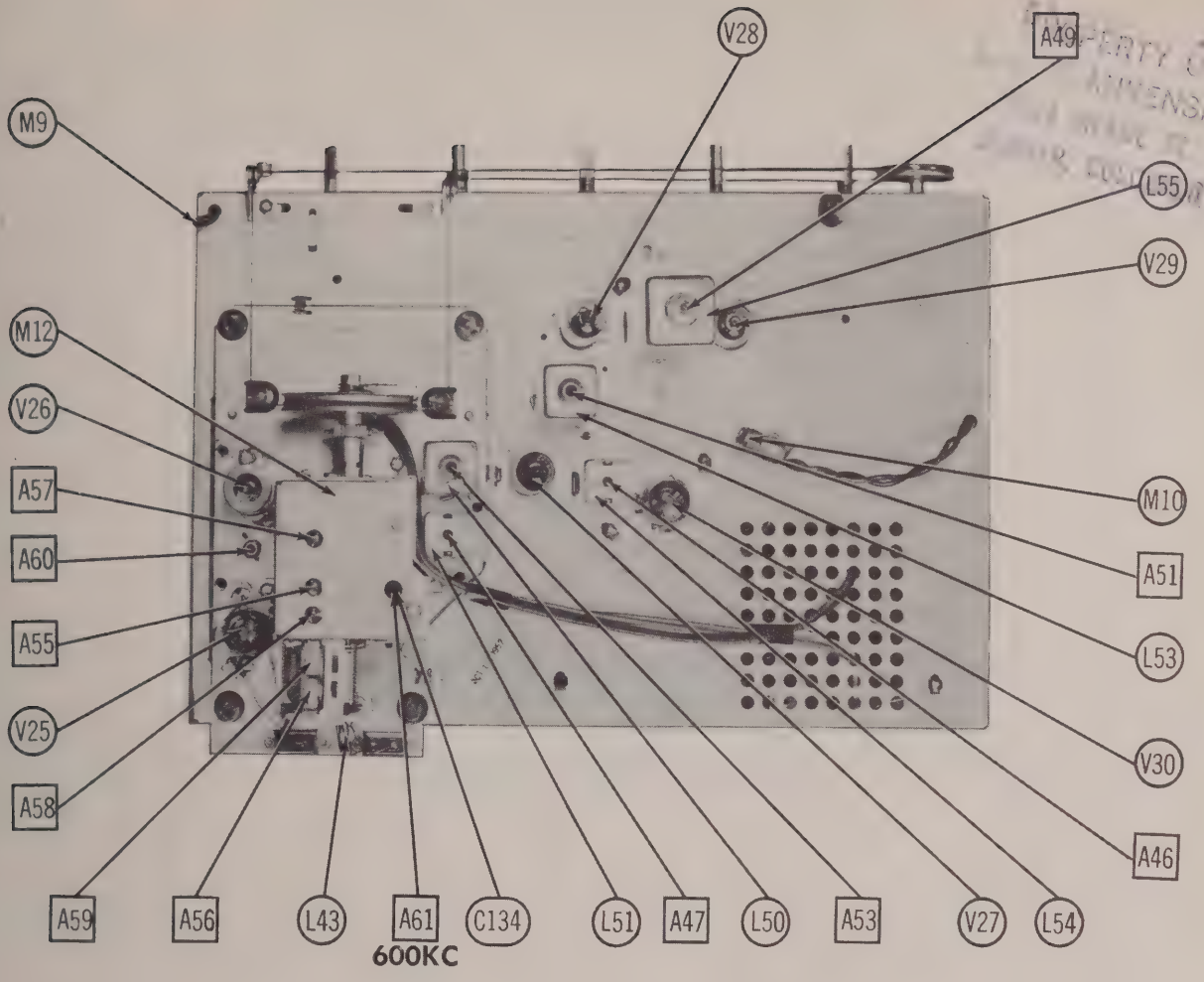
PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

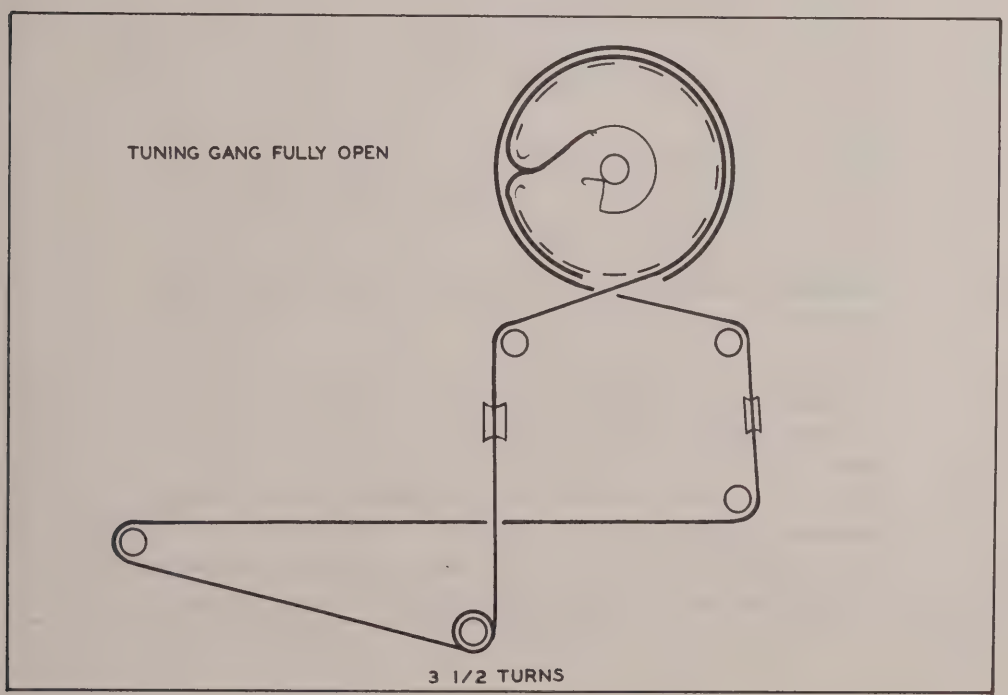
ITEM No.	REPLACEMENT DATA			REMARKS
	RCA Victor PART No.	WALCO PART No.	JENSEN PART No.	
M8	* 75496	W-44MGS or W-44MGA and W-44A or W-44S	M-74LP or M-75LP and M-74 or M-75	* 33 1/3-45 Needle
	♦ 75497			♦ 78 Needle

MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M9	Pilot Light	11765	Type No. 51.
M10	Pilot Light	11765	Type No. 51.
M11	Pilot Light	11765	Type No. 51.
M12	Tuning Capacitor	77308	26-502MMF, 23-285MMF, 18-180MMF
M13	Switch	77476	Function Selector
	Dial	77477	Polystyrene Dial Scale
	Escutcheon	77321	Dial Scale Escutcheon Less Dial
	Pointer	77220	Station Selector Pointer
	Knob	77330	Function Selector
	Knob	77328	Off/On Volume, Tone and Tuning (3 Used)



RADIO CHASSIS–TOP VIEW



RADIO DRIVE CORD STRINGING

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF Tuner Oscillator Circuit may be accomplished by removing the channel selector, fine tuning knobs and selector escutcheon. To remove escutcheon slide spring to left.

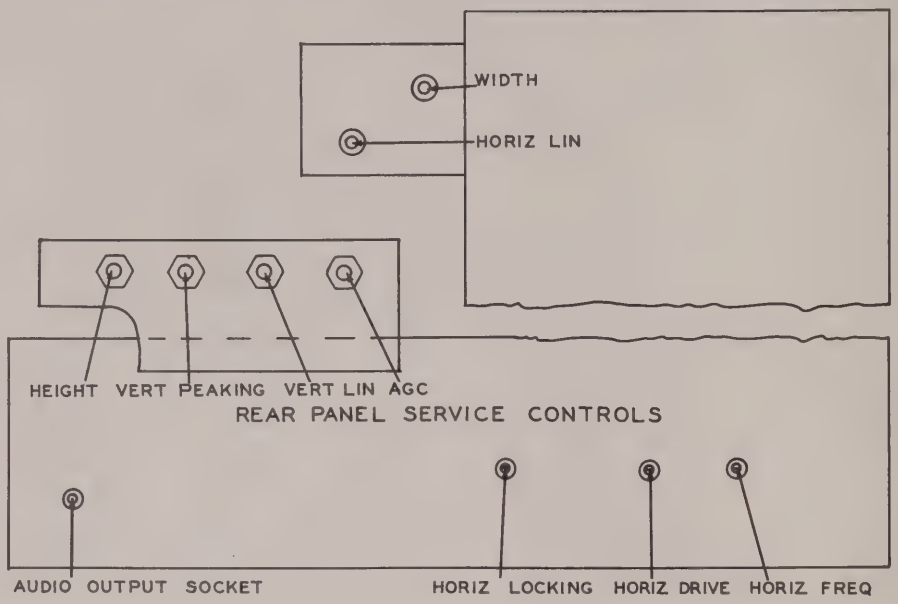
PICTURE TUBE SAFETY GLASS CLEANING

For picture tube safety glass cleaning, it is necessary to remove chassis. (See disassembly instructinns).

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION



SPECIAL ADJUSTMENT - AGC CONTROL

Turn the AGC control fully counter clockwise then clockwise until a very slight bend or change of bend, in picture is noted. Then turn counter clockwise just enough to remove the bend or change of bend. With very weak signals turn the AGC control clockwise until snow in picture becomes more pronounced, then counter clockwise until best signal to noise ratio is obtained. Adjustment should be made on a strong signal if possible.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from the rear panel of the chassis. Set the horizontal hold control at the mid-position of its range and adjust the horizontal frequency slug until the picture synchronizes horizontally.

If synchronization cannot be obtained by the above adjustment see HORIZONTAL SWEEP CIRCUIT ADJUSTMENT on page 19.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate Sound IF Detector buzz, adjust the ratio detector secondary (L38) located on bottom of chassis. (See tube placement chart).

FUSES

One fuse is used for horizontal sweep circuit protection. (See tube placement chart, for location.)

CENTERING

Centering is accomplished mechanically by means of a centering lever on the PM focusing assembly. Adjust the centering lever from side to side, and up and down until the picture is properly centered.

DISASSEMBLY INSTRUCTIONS

TV DISASSEMBLY

1. Remove 8 control knobs from front panel.
2. Remove 3 wood screws and 2 metal screws. Remove rear cover.
3. Disconnect transmission line, built-in antenna, yoke plug, CRT socket, HV lead, phono audio cable -AC line to radio, speaker lead.
4. Remove 6 chassis bolts. Remove chassis.

MAIN ST.
COLORADO

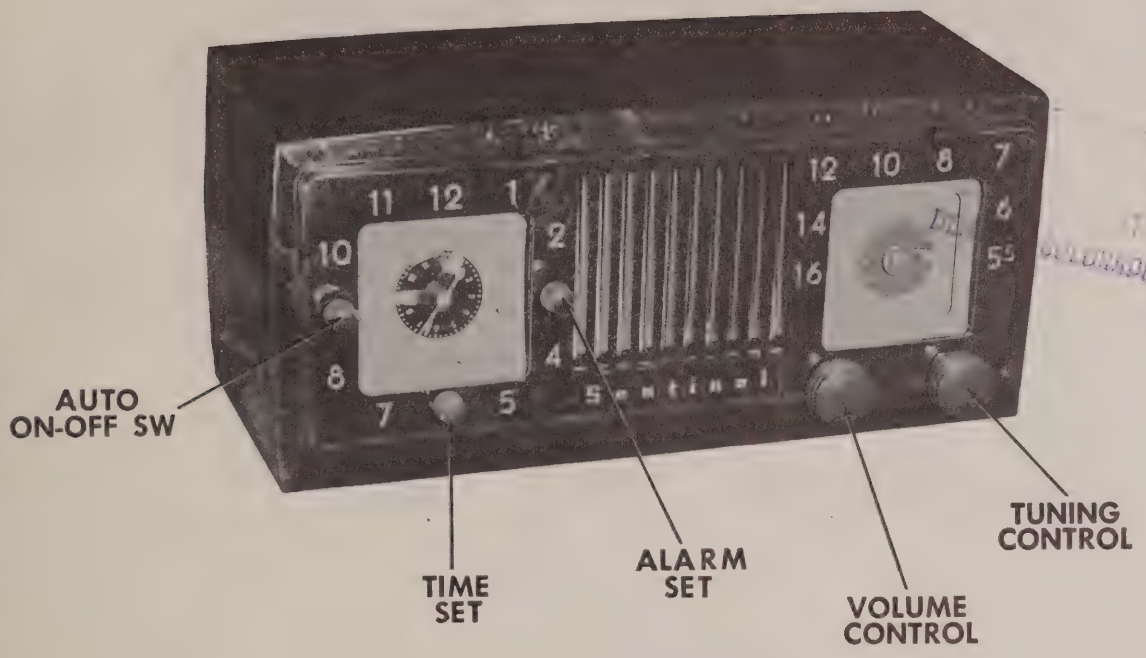
POWER CHASSIS

1. Disconnect power plug from radio chassis.
2. Disconnect phono motor.
3. Disconnect FM antenna and AM antenna plugs.
4. Disconnect jewel light.
5. Loosen clamp hold lead to radio.
6. Remove 4 chassis bolts. Remove chassis.

RADIO

1. Remove 2 clip spring and 2 pins from radio phono slide rails.
2. Remove entire radio phono unit.
3. Remove 7 wood screws. Remove baffle board.
4. Remove 4 speaker nuts. Remove speaker.

SENTINEL
MODELS 1U346, 346



SENTINEL
MODELS 1U346, 346

TRADE NAME	Sentinel Model 1U346, 346
MANUFACTURER	Sentinel Radio Corp., 2100 W. Dempster, Evanston, Ill.
TYPE SET	AC Operated AM Superheterodyne Receiver with Electric Clock
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det.-AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles
RATING	.25 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1650 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.02MFD	High side to rear stator plates of tuning gang. Low side to B-.	455KC (400%Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust in order given for maximum output.
2.		Loop	1650KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune to 1400KC signal	"	A6	"

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PARTS LIST AND DESCRIPTIONS

SENTINEL
MODEL 1U346

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SENTINEL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det.-AVC-AF Amp.	12AV6	12AV6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SENTINEL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	40	150	25E74	PRS150/40-40-40		EDL44215		3N532	TVA-3448	Yellow Red Note 1 Green
B	20	150								
C	40	150								
C2	250		23E2027	SI250	D6-251		GP2K-251	UC-5325	5GA-T25	
C3	.05	200	23E216	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C4	250		23E2027	SI250	D6-251		GP2K-251	UC-5325	5GA-T25	
C5	.01	400	23E211	P488-01	D6-103	PTE4S1	GP2-333-103	PT41 1	4TM-S1	
C6A }	250		♦23E2041-7		♦PC-81		♦1404-02		♦102C2	
B }										
C	.01									
C7	.01	400	23E411	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C8	.05	400	23E416	489ZX-05		PJ4S5		PT415	4TM-S5	
C9	.1	400	20E833	P488-1	DF-104	PTE4P1		PT401	4TM-P1	Note 2

Note 1. Some Models use a 50-50MMF, 150V and a 10MFD, 150V in this application.
Note 2. When replacing this item, the coil must be rewound on cap exactly as manufacturer's original unit.
Sentinel part #20E833 includes coil
♦ Items C6A, C6B, C6C, R6A, R6B are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SENTINEL PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	28E94	Q13-133	AG-60-Z	BSK-60	U-48	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: SENTINEL PART No.	IRC PART No.	NOTES
R2	1 Meg	½	27E105	BTS-1 Meg	
R3	22KΩ	½	27E223	BTS-22K	
R4	3.3Meg	½	27E335	BTS-3.3Meg	
R5	3.3Meg	½	27E335	BTS-3.3Meg	

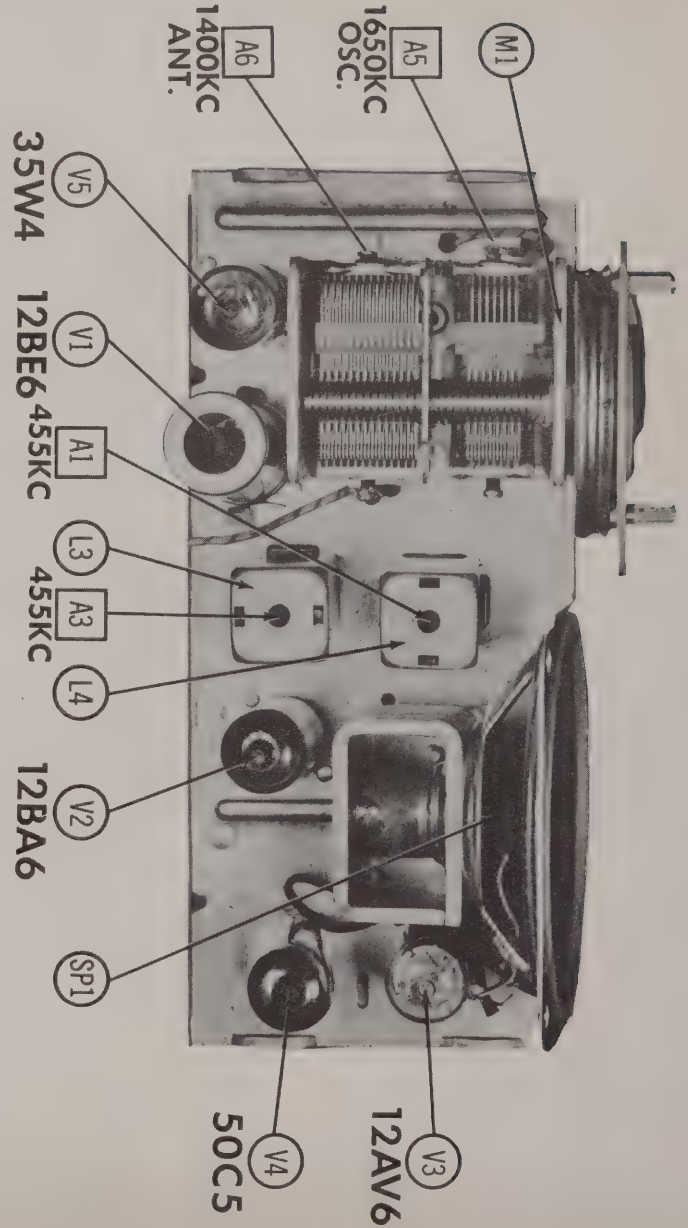
ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: SENTINEL PART No.	IRC PART No.	NOTES
R6A	250KΩ	½	♦ 23E2041-7		
B	500KΩ	½			
R7	150Ω	½	27E151	BTS-150	
R8	220Ω	½	27E221-2	BTS-220	
R9	2200Ω	1	27E222-3	BTA-2200	

♦ Items R6A, R6B, C6A, C6B, C6C are combined in one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: SENTINEL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	3.8KΩ	3Ω	235Ω	.53Ω	22E49		A-3026			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

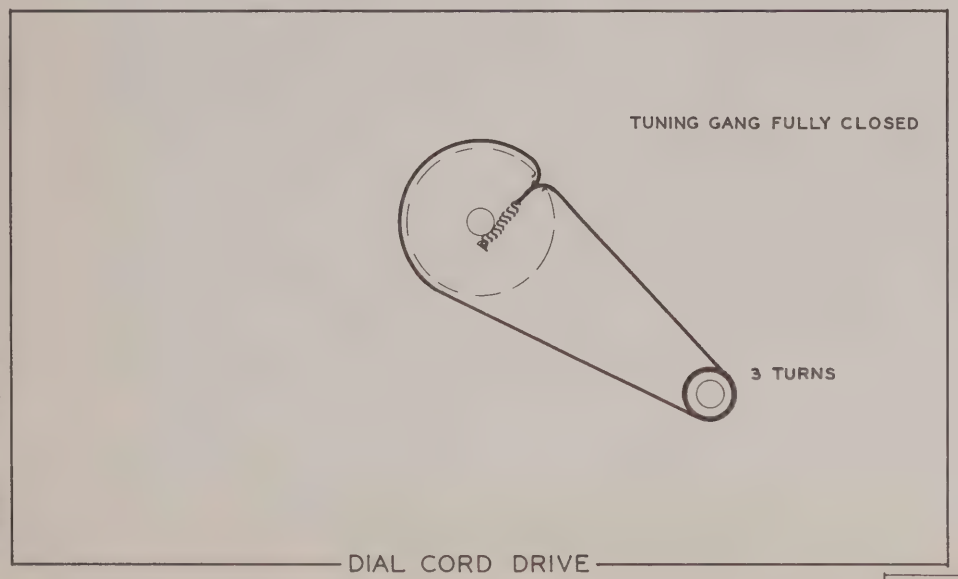
ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	SENTINEL PART No.	VIKING PART No.	QUAM PART No.	
SP1	$3\frac{1}{2}$"	PM	3Ω	1E32-3 1E32 ① 1E32-2 ①	35J4	3A07	① Alternate $3\frac{1}{2}$" speaker.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	SENTINEL PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	3Ω		7E347				Includes cabinet back
L2	Osc. Coil	1.6Ω	8.6Ω	20E772				
L3	Input IF	14.5Ω	14.5Ω	20E732	16-6758	BC-352	12-C1	
L4	Output IF	14.5Ω	14.5Ω	20E732	16-6758	BC-353	12-C2	

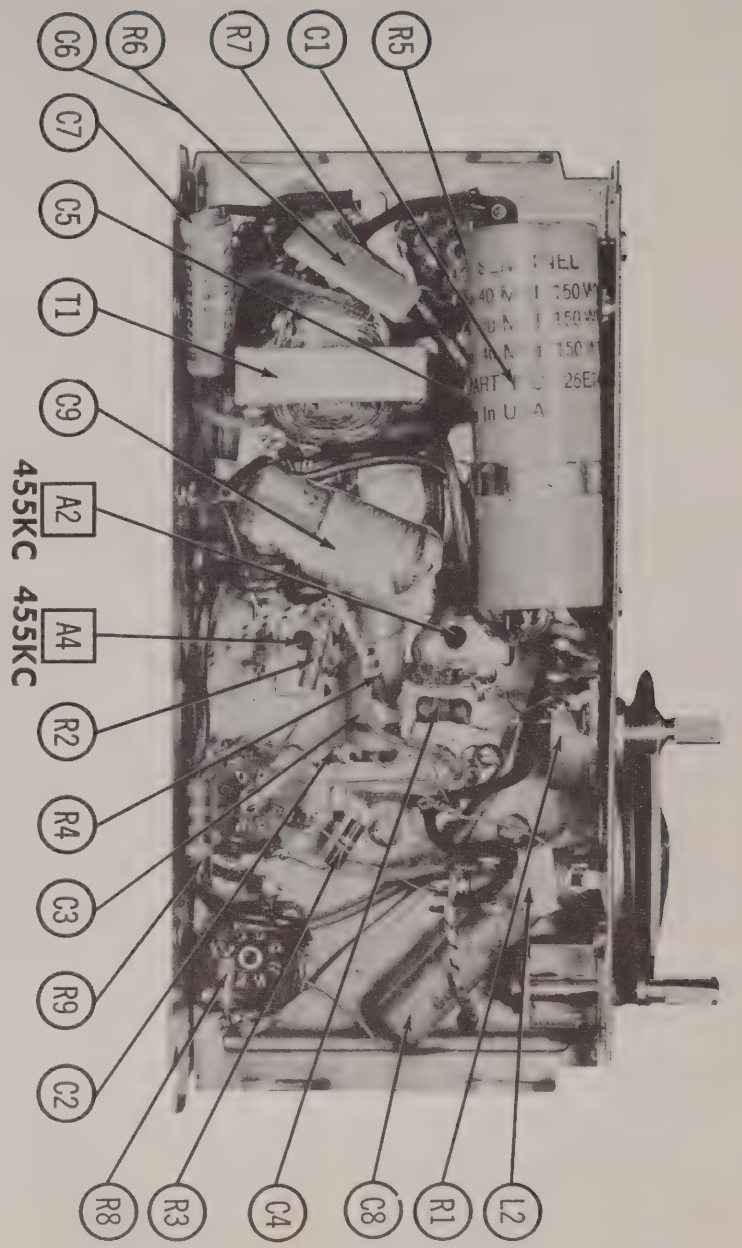
MISCELLANEOUS

ITEM No.	PART NAME	SENTINEL PART No.	NOTES
M1	Tuning Capacitor	24E61	35-457MMF, 21-150MMF
	Cabinet	7E345-3	Ivory-Plastic
	Cabinet	7E345-5	Green-Plastic
	Cabinet	7E345-9	Rust-Plastic
	Cabinet	7E345-7	Blue-Plastic
	Cabinet	7E348-8	Yellow-Plastic
	Cabinet	7E345-6	Mahogany-Plastic
	Knob	37E80-2	Clock for Ivory, Green, Rust, Blue & Yellow cabinets.
	Knob	37E81-2	Radio for Ivory, Green, Rust, Blue & Yellow cabinets.
	Knob	37E80-5	Clock Mahogany (3 Used)
	Knob	37E81-5	Radio Mahogany (2 Used)
	Crystal	9E46	Clock & Radio
	Clock	61E17	
	Pointer Assembly	20E812	
	Dial Back Plate	5E75	

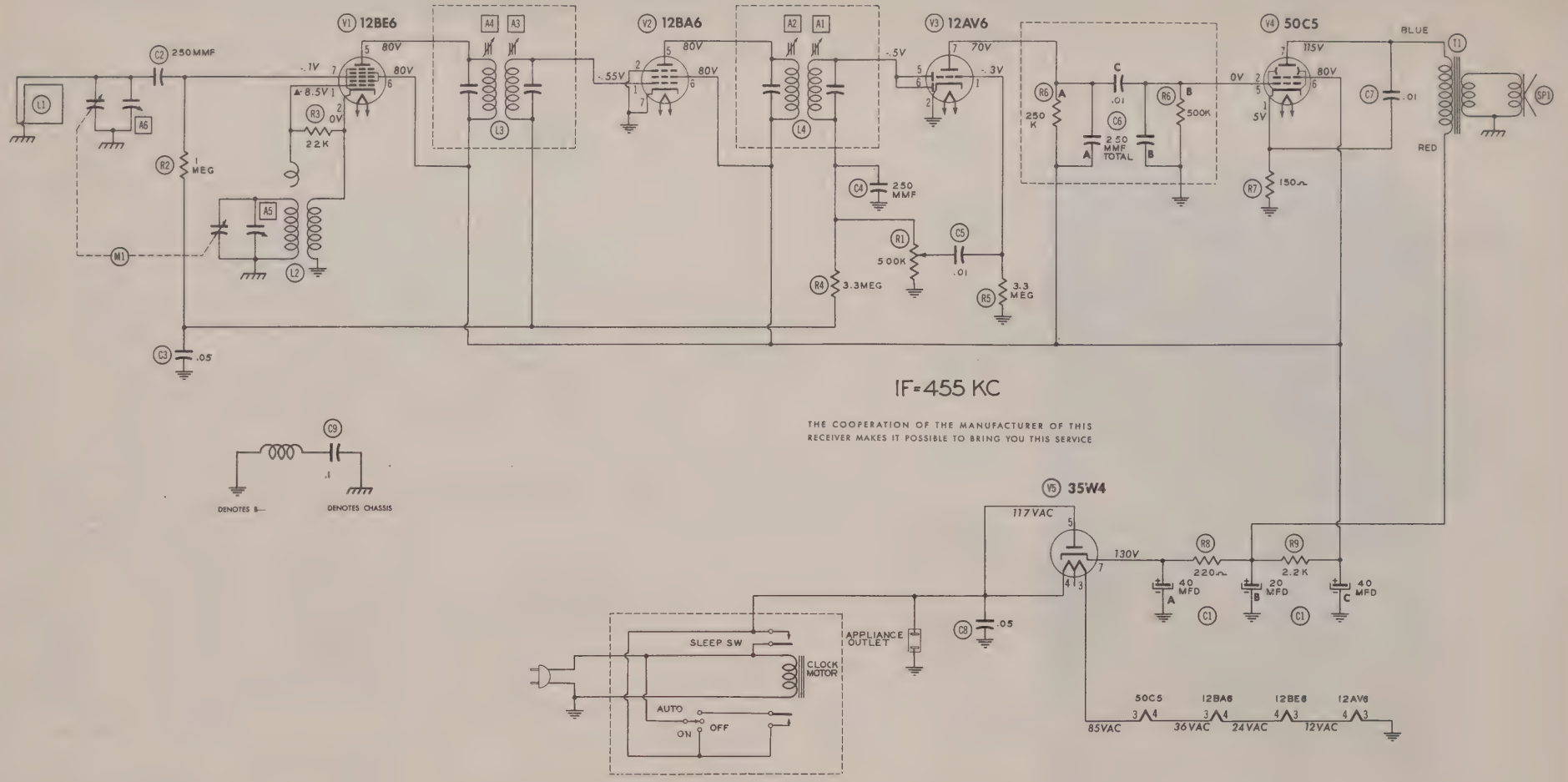


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



SENTINEL MODEL 1U346



IF=455 KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	1.6Ω	12Ω	24Ω	†2.4KΩ	†2.4KΩ	4.8Meg
V 2	12BA6	3.8Meg	0Ω	36Ω	24Ω	†2.4KΩ	†2.4KΩ	0Ω
V 3	12AV6	3.3Meg	0Ω	0Ω	12Ω	500KΩ	500KΩ	†250KΩ
V 4	50C5	150Ω	500KΩ	83Ω	36Ω	500KΩ	†2.4KΩ	†455Ω
V 5	35W4	INF	†220Ω	83Ω	120Ω	120Ω	110Ω	700KΩ

▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 7 OF V5.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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209-11

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

SETCHELL-CARLSON
MODELS 53, 531, 5301, 5302 (Ch. 152)

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MODEL 531

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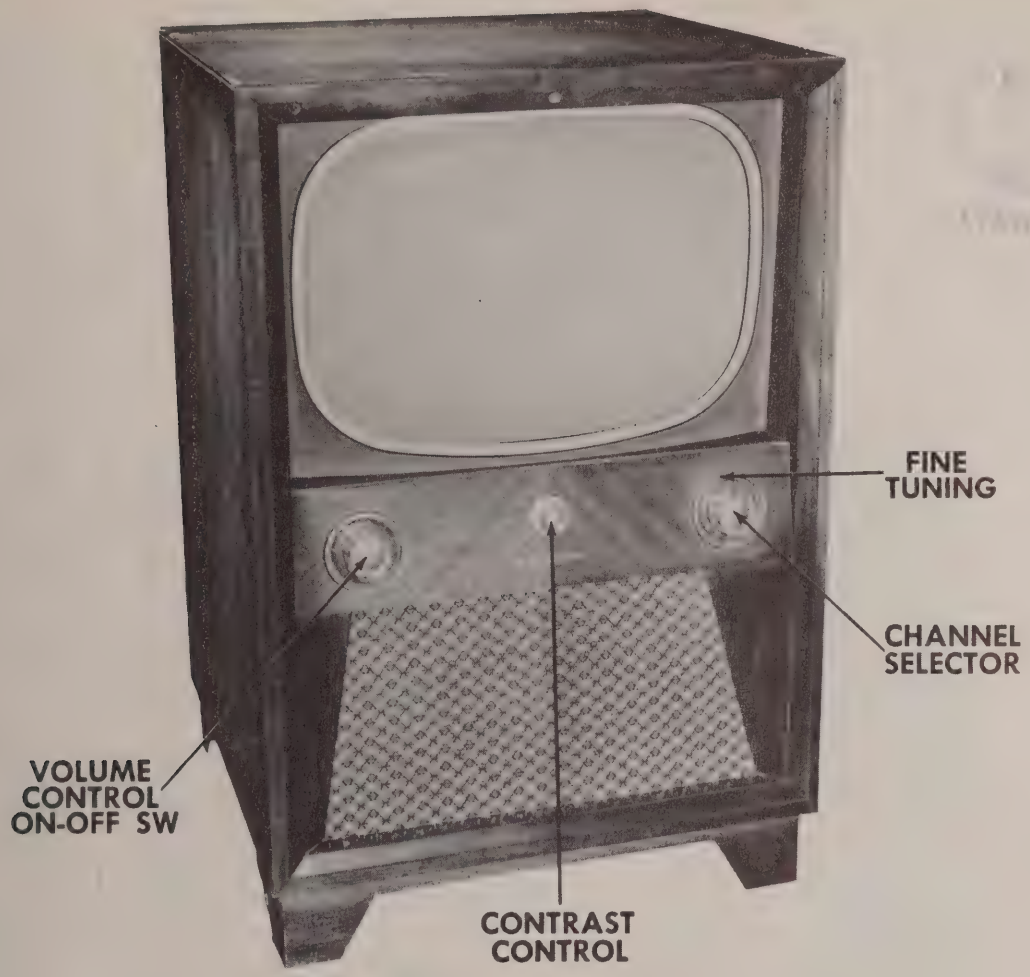

SETCHELL-CARLSON
MODELS 53, 531, 5301, 5302 (Ch. 152)

SETCHEL-CARLSON MODEL 531

TRADE NAME	Setchell-Carlson Models 53, 531, 5301, 5302 (Ch.152)
MANUFACTURER	Setchell-Carlson Inc., New Brighton, Minn.
TYPE SET	Television Receiver
TUBES	Twenty-Four
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 1.9 Amp @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13, Video IF 25MC, Sound IF 20.5MC (Intercarrier).

INDEX

Alignment Instructions 6
Disassembly Instructions 18
Horizontal Sweep Circuit Adjustments 11
Parts List and Descriptions 14, 15, 16
Photographs
Cabinet-Rear View 11
Chassis-Bottom View 10
Chassis-Top View 3
Sub-Chassis
A3 4
B1 7
C2 7
D4 8
Photographs (Cont)
Sub-Chassis
E4 9
F6 9
G2 18
Resistance Measurements 8
Servicing in the Field 13
Schematic (Alternate Circuits) 19, 20
Schematic (TV) 2
Trouble Shooting Aids 12, 17
Tube Failure Check Chart 5
Tube Placement Chart 5

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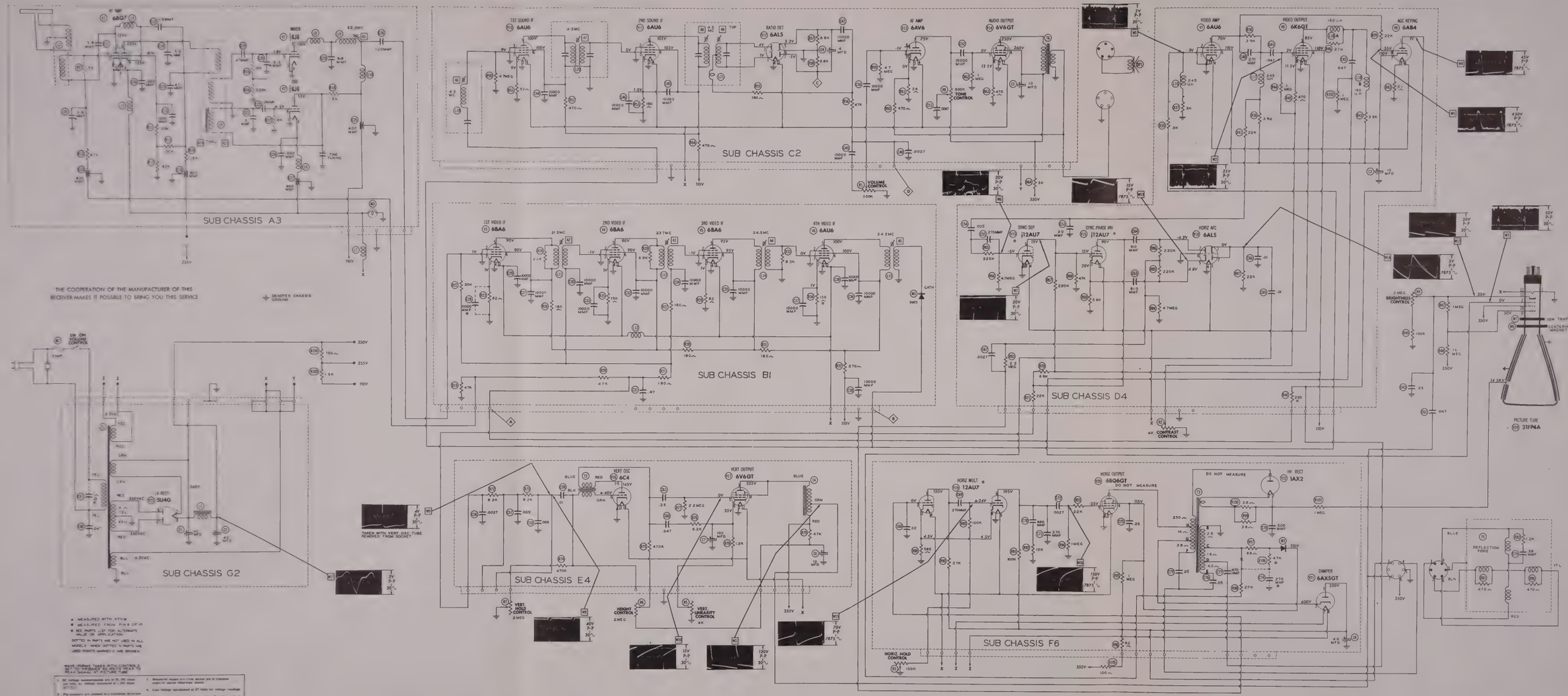
SUB CHASSIS A3
SUB CHASSIS C2
SUB CHASSIS B1
SUB CHASSIS D4
SUB CHASSIS G2
SUB CHASSIS E4
SUB CHASSIS F6
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
DENOTES CHASSIS GROUND
PICTURE TUBE 21FP4A
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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SETCHELL-CARLSON
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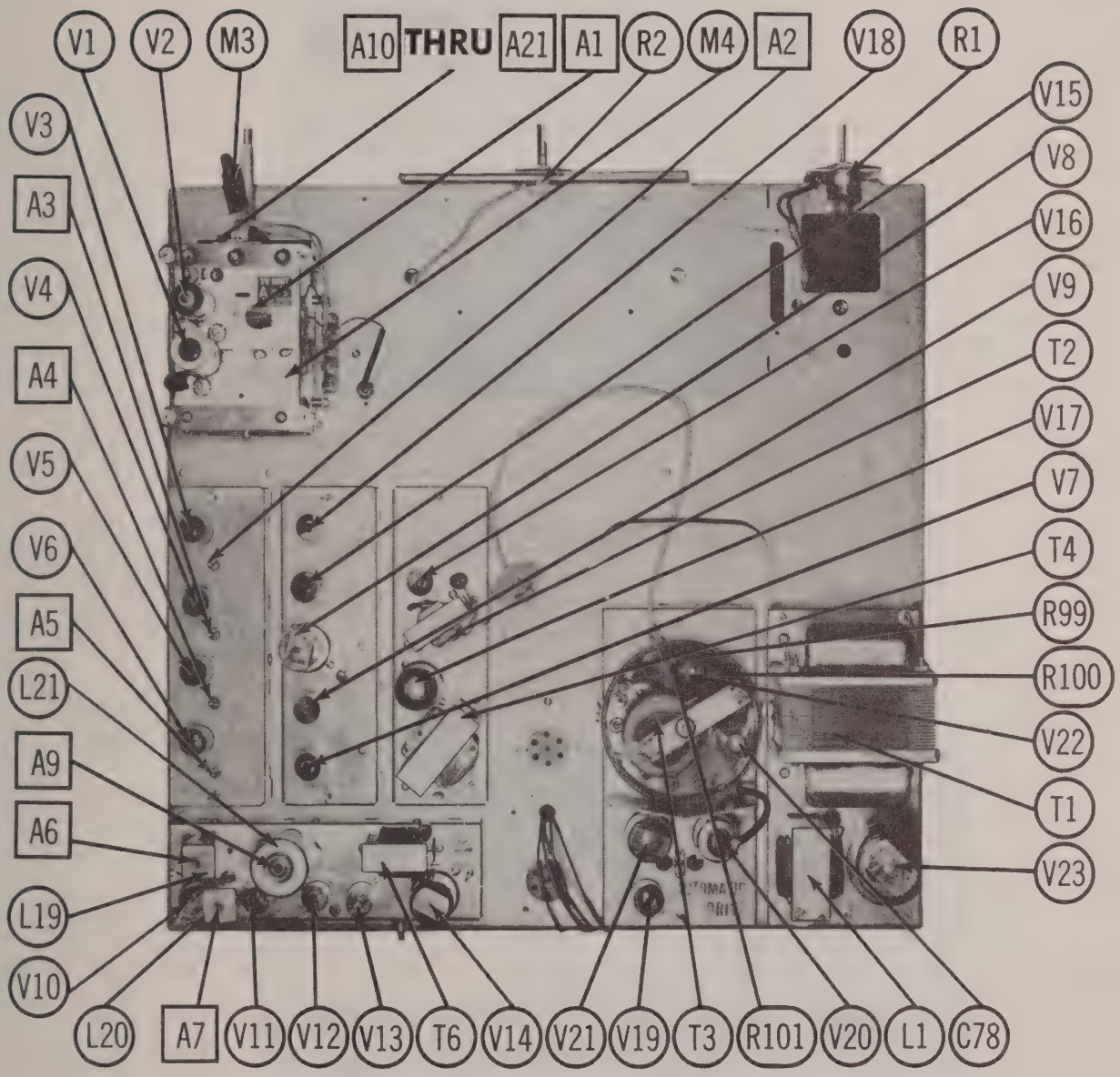
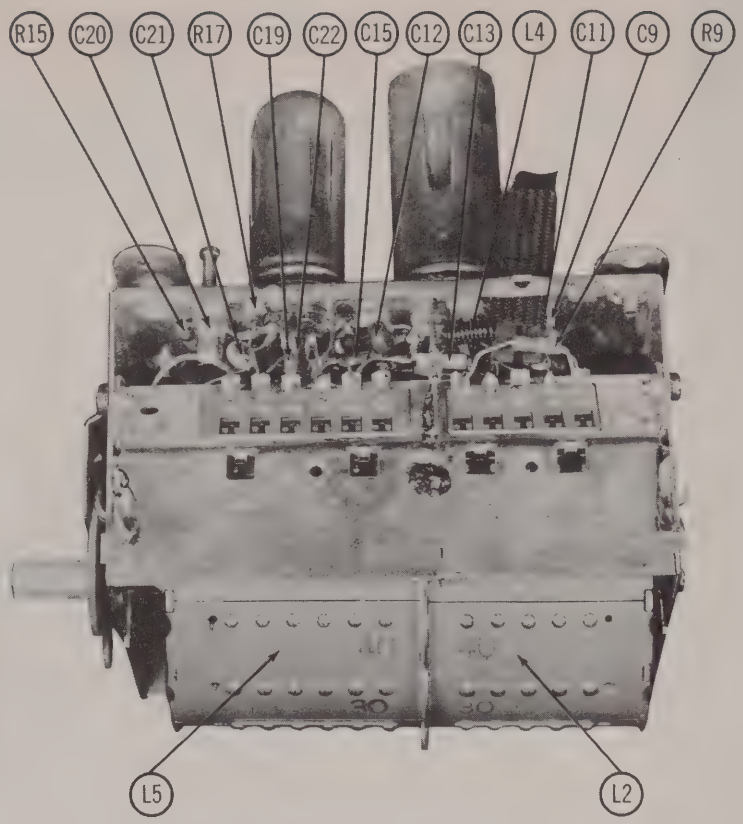
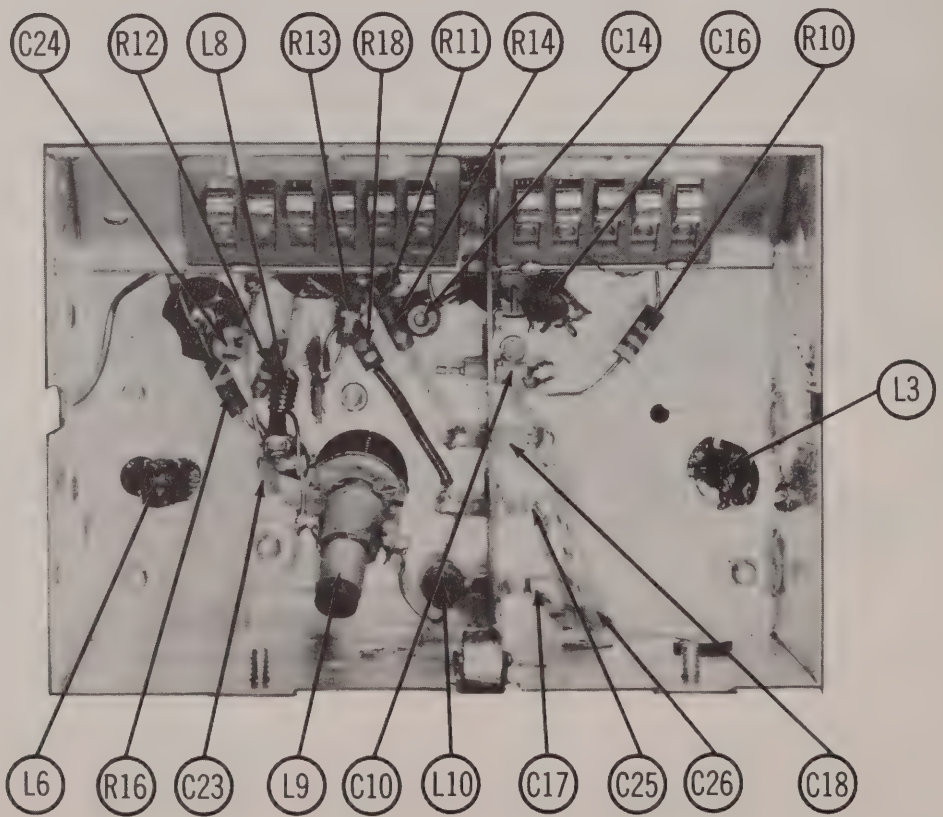
SETCHELL-CARLSON
MODELS 53, 531, 5301, 5302 (Ch. 152)



CHASSIS TOP VIEW

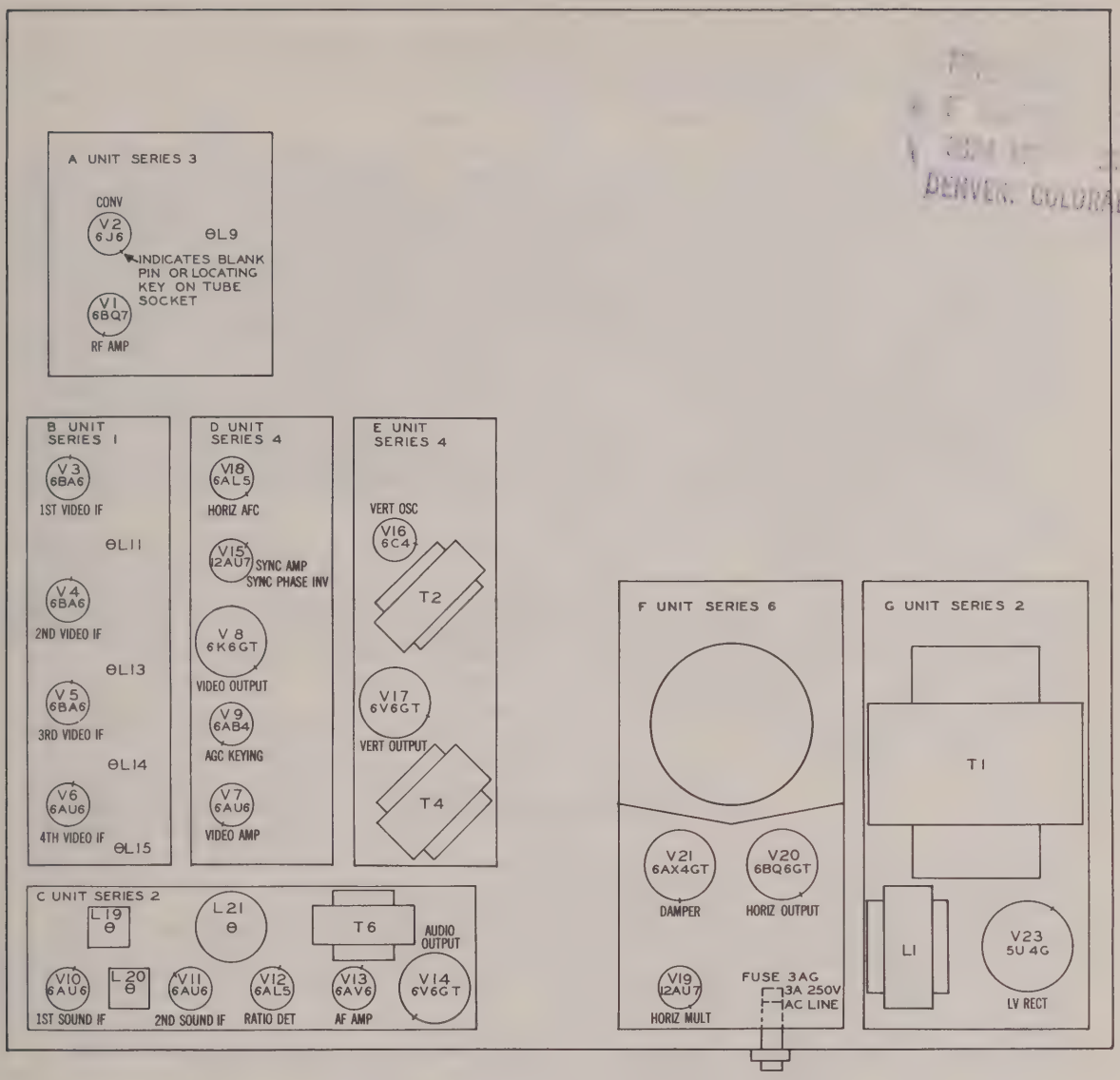


SUB-CHASSIS A3



SUB-CHASSIS A3

TUBE PLACEMENT CHART



DENVER, COLORADO

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V23 Fuse (M2)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5, V6
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V7, V8, V24
Has pic, no sound - V10, V11,12, 13, 14
Overloaded picture - V9

SYNC FAILURE
No vert. sync - V15, V16
No horiz. sync - V15, V18, V19
No vert. or horiz. sync - V15

SWEEP FAILURE
No raster, has sound - V19, V20, V21, V22, V24
No vertical deflection - V16, V17
Poor vert. linearity or foldover - V16, V17
Poor horiz. linearity or foldover - V19, V20, V21
Narrow picture - V19, V20, V21, V22, V23
Vert. off freq. - V15, V16
Horiz. off freq. - V15, V18, V19

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube, V2, from its socket and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to point (A). Connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	22.3MC (Unmod)	Any	DC probe to point (B) Common to chassis.	A1	Adjust for maximum deflection. Attenuate generator output to maintain approximately 1.5 Volts at VTVM.
2.	"	"	21.5MC	"	"	A2	"
3.	"	"	23.7MC	"	"	A3	"
4.	"	"	24.5MC	"	"	A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	24MC (10MC Swp)	20.5MC 25.0MC	Any	Vert. Amp. to point (B). Low side to chassis.		Check for response similar to Fig. 1. If necessary retouch A1 thru A5 for desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.01MFD	High side to point (B) Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point (C) Common to chassis.	A6, A7, A8	Adjust for maximum deflection. Attenuate generator output to maintain not more than 3 or 4 Volts at VTVM
7.	"	"	"	"	DC probe to point (D) Common to chassis.	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	.01MFD	High side to point (B). Low side to chassis.	4.5MC (10MC Swp)	4.5MC	Any	Vert. Amp. to point (C). Low side to chassis.	A6, A7 A8	Disconnect stabilizer capacitor C4. Adjust for curve of maximum amplitude and symmetry as in Fig. 2.
7.	"	"	"	"	"	Vert. Amp. to point (D). Low side to chassis.	A9	Reconnect capacitor C4. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 3. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
The channel oscillator adjustment screws are reached through a hole just to the right of the channel switch shaft
The correct adjustment screw is accessible thru this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. to point (B). Low side to chassis.	A10	Adjust to place video marker at 50% on high frequency slope of IF response curve as in Fig. 4.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A11	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A12	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A13	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A14	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A15	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A16	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A17	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A18	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A19	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A20	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A21	

THE RF AND MIXER PORTION OF THIS RECEIVER HAS BEEN PROPERLY ALIGNED AT THE FACTORY AND IS VERY STABLE. ALIGNMENT OF THIS PORTION SHOULD NOT BE REQUIRED IN THE FIELD.

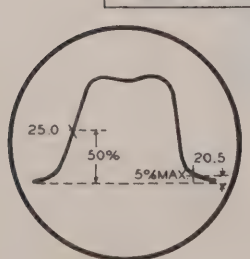


FIG.1

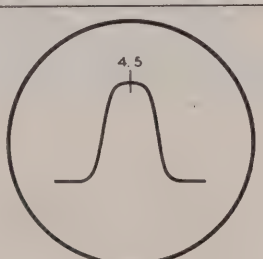


FIG. 2

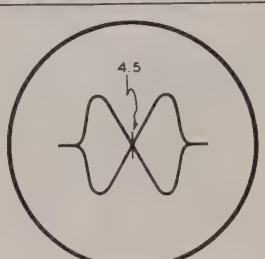


FIG. 3

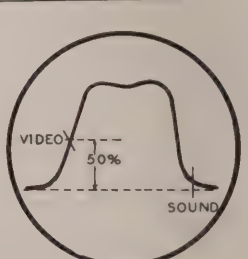
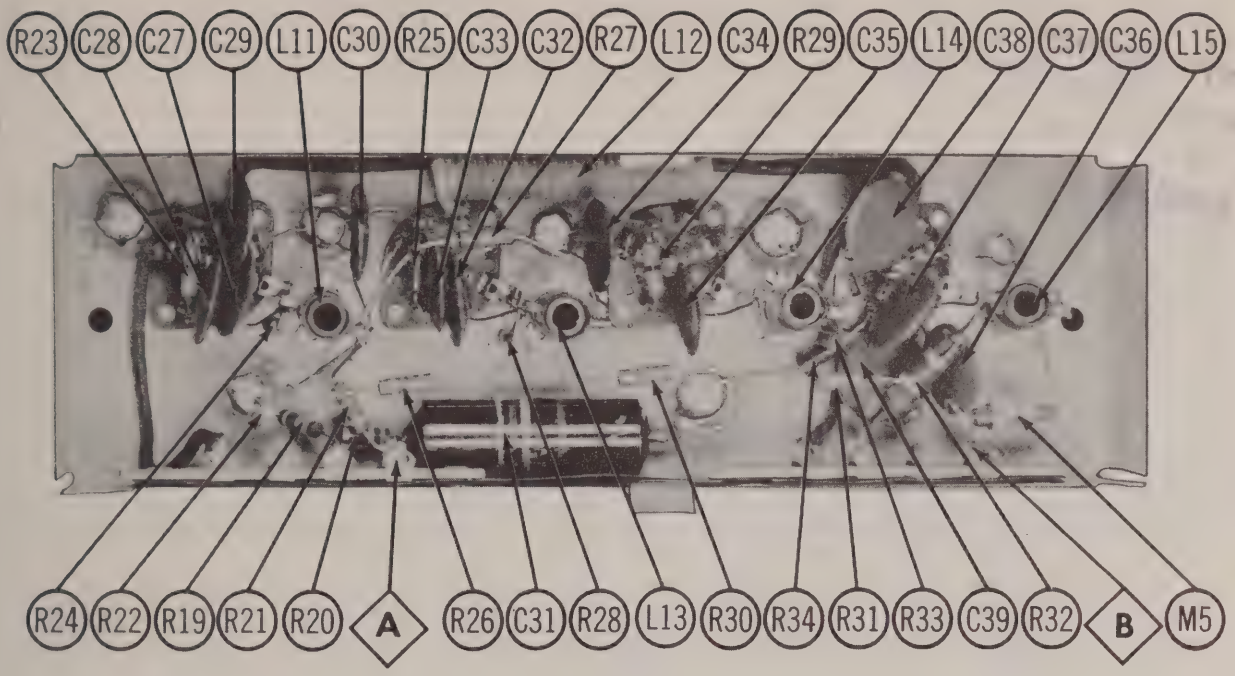
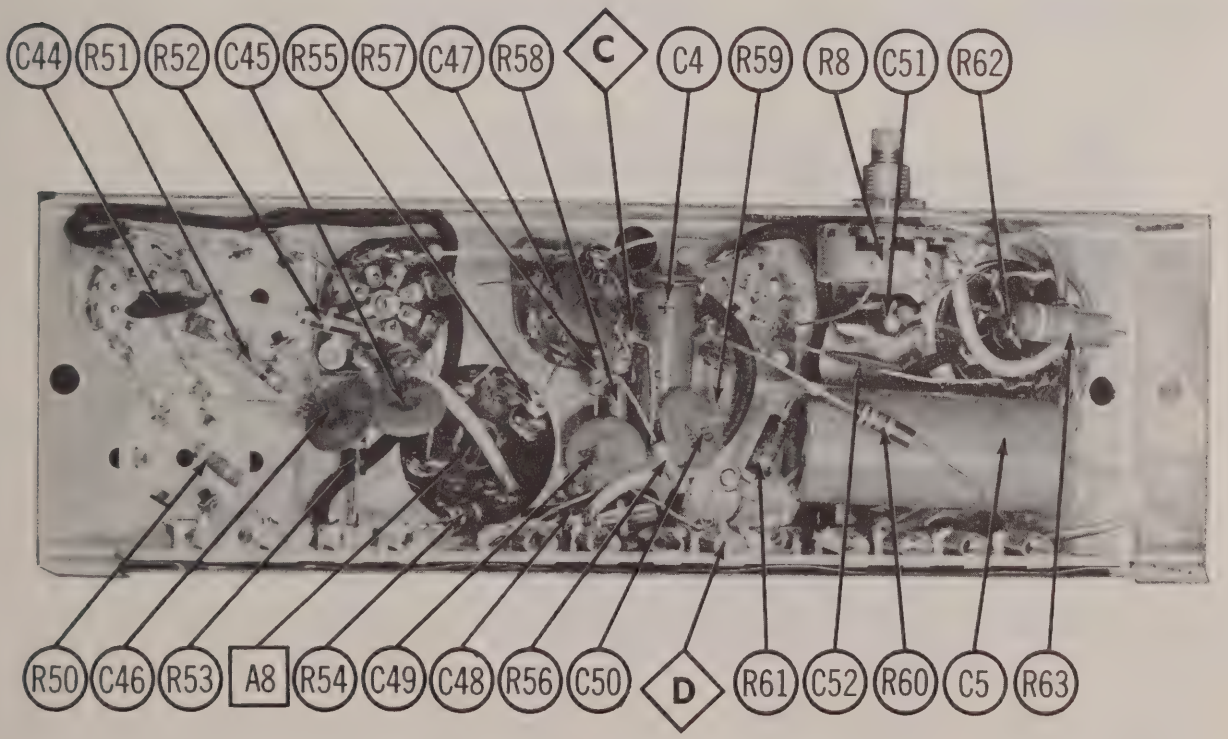


FIG.4



SUB-CHASSIS B1

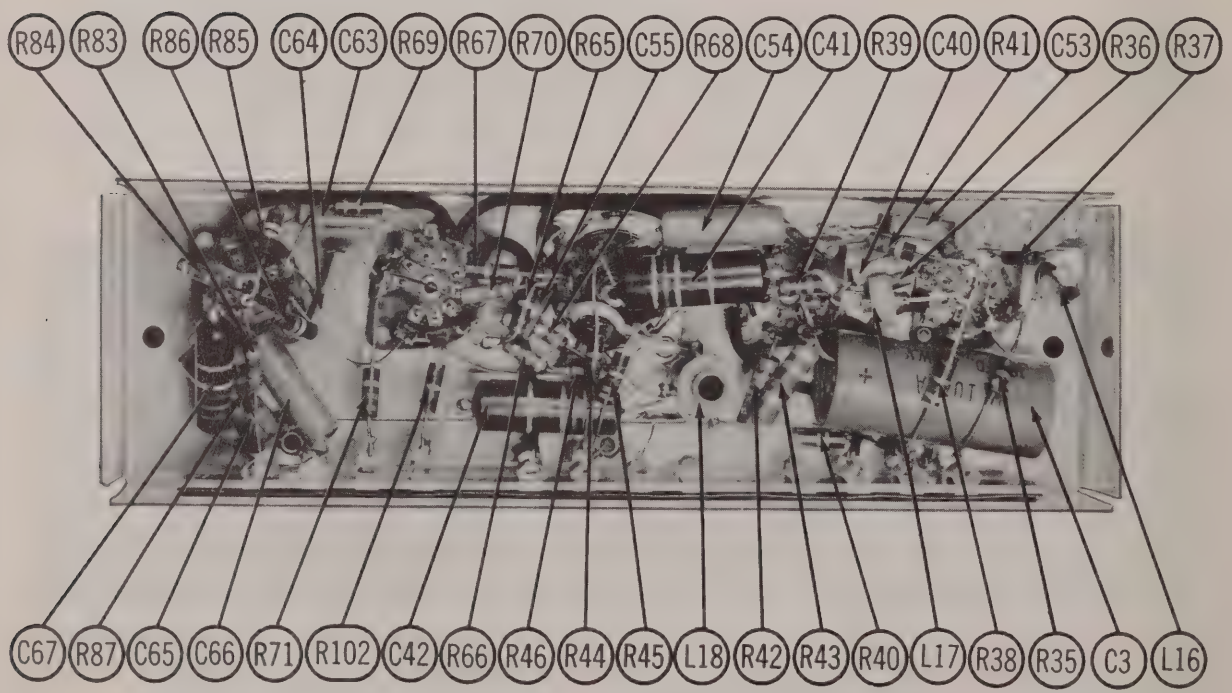


SUB-CHASSIS C2

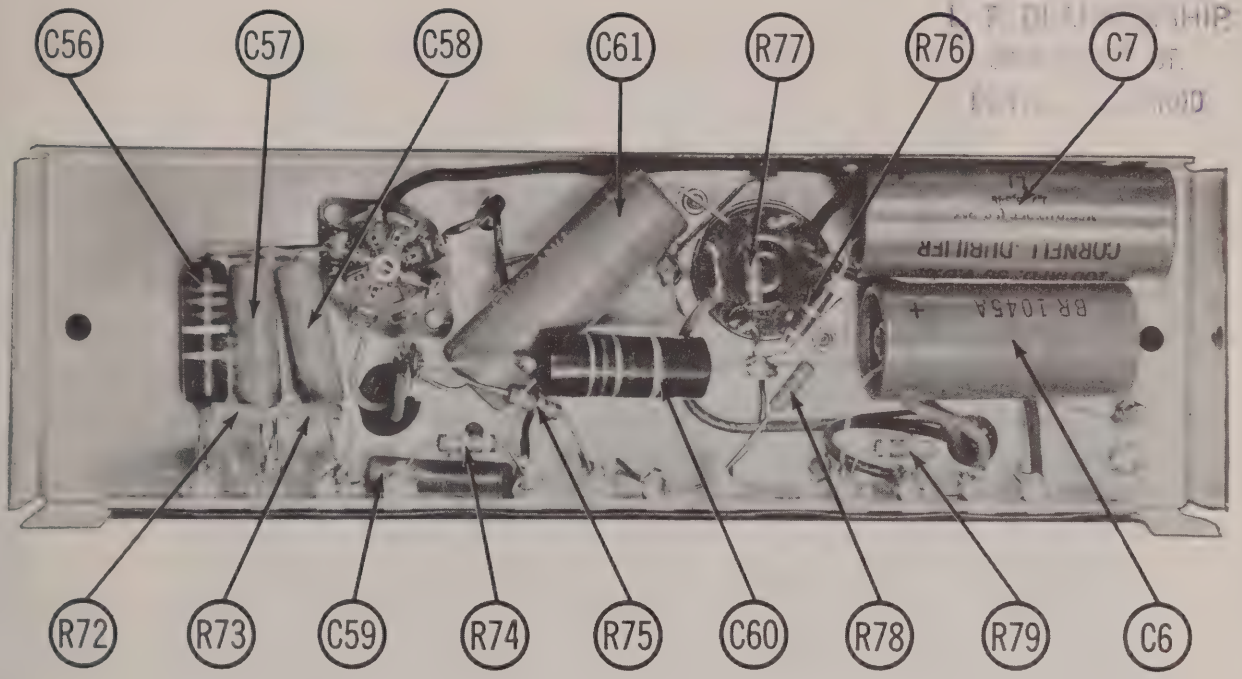
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7	INF	94KΩ	0Ω	.1Ω	0Ω	†2.3KΩ	†170KΩ	INF	0Ω
V 2	6J6	†17.3KΩ	†2.3KΩ	.1Ω	0Ω	230KΩ	10KΩ	0Ω		
V 3	6BA6	98KΩ	0Ω	.1Ω	0Ω	†3.1KΩ	†3.1KΩ	82Ω		
V 4	6BA6	94KΩ	0Ω	.1Ω	0Ω	†3KΩ	†3KΩ	150Ω		
V 5	6BA6	94KΩ	0Ω	.1Ω	0Ω	†2.8KΩ	†2.8KΩ	82Ω		
V 6	6AU6	.4Ω	0Ω	.1Ω	0Ω	†2.6KΩ	†2.6KΩ	150Ω		
V 7	6AU6	3KΩ	0Ω	0Ω	.1Ω	†10.1KΩ	†2.3KΩ	0Ω		
V 8	6K6GT	INF	0Ω	†5.8KΩ	†2.3KΩ	1 Meg	4.7Meg	.1Ω	780Ω	
V 9	6AB4	310KΩ	†2.3KΩ	5.1Ω	.1Ω	INF	†32KΩ	†2.3KΩ		
V 10	6AU6	4.7Meg	0Ω	0Ω	.1Ω	†3.2KΩ	†3.2KΩ	82Ω		
V 11	6AU6	3.6Ω	0Ω	0Ω	.1Ω	†2.7KΩ	†2.7KΩ	180Ω		
V 12	6AL5	INF	INF	.1Ω	0Ω	6.8KΩ	0Ω	6.8KΩ		
V 13	6AV6	4.7Meg	23Ω	0Ω	.1Ω	INF	INF	†500KΩ		
V 14	6V6GT	0Ω	0Ω	†3.4KΩ	†3KΩ	1 Meg	1 Meg	.1Ω	470Ω	
V 15	12AU7	8.3KΩ	47KΩ	5.6KΩ	.1Ω	.1Ω	†95KΩ	4.7Meg	0Ω	0Ω
V 16	6C4	1.1Meg	INF	0Ω	.1Ω	1.1Meg	1.6Meg	0Ω		
V 17	6V6GT	10.5KΩ	0Ω	†660Ω	†660Ω	2.2Meg	INF	.1Ω	2.3KΩ	
V 18	6AL5	22KΩ	22KΩ	0Ω	.1Ω	4.9Meg	0Ω	4.9Meg		
V 19	12AU7	†27KΩ	8Meg	560Ω	.1Ω	.1Ω	†100KΩ	170KΩ	560Ω	0Ω
V 20	6BQ6GT	INF	0Ω	†220Ω	780KΩ	1 Meg	1 Meg	.1Ω	0Ω	Top Cap ‡14Ω
V 21	6AX4GT	INF	INF	INF	‡3.8Ω	†220Ω	INF	INF	INF	
V 22	1AX2	PINS 1 - 9 HAVE INF RESISTANCE								Top Cap ‡264Ω
V 23	5U4G	INF	120KΩ	INF	41Ω	INF	43.4Ω	INF	120KΩ	
V 24	21FP4	0Ω	1 Meg	Pin 6 1.3Meg	Pin 10 †39Ω	Pin 11 570KΩ	Pin 12 .1Ω			

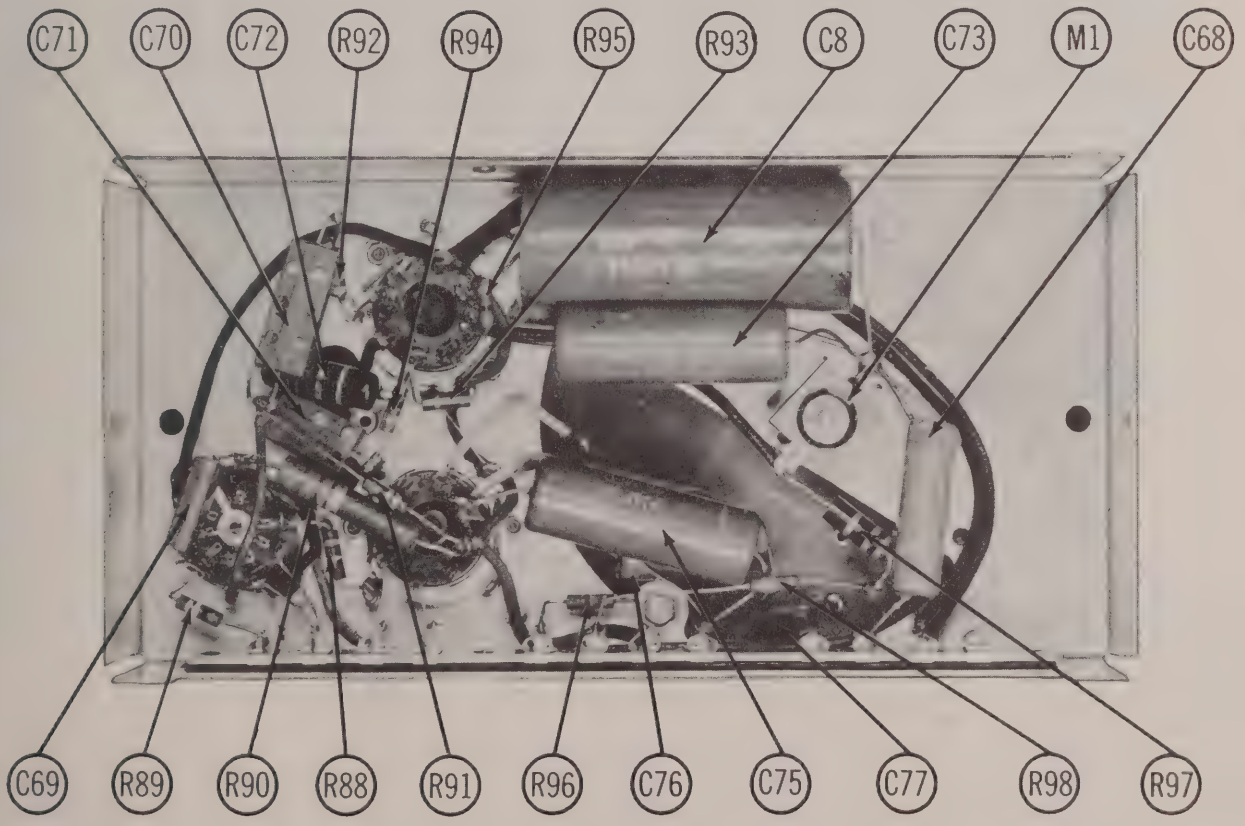
‡ MEASURED FROM PIN 3 OF V21.
† MEASURED FROM PIN 8 OF V23.



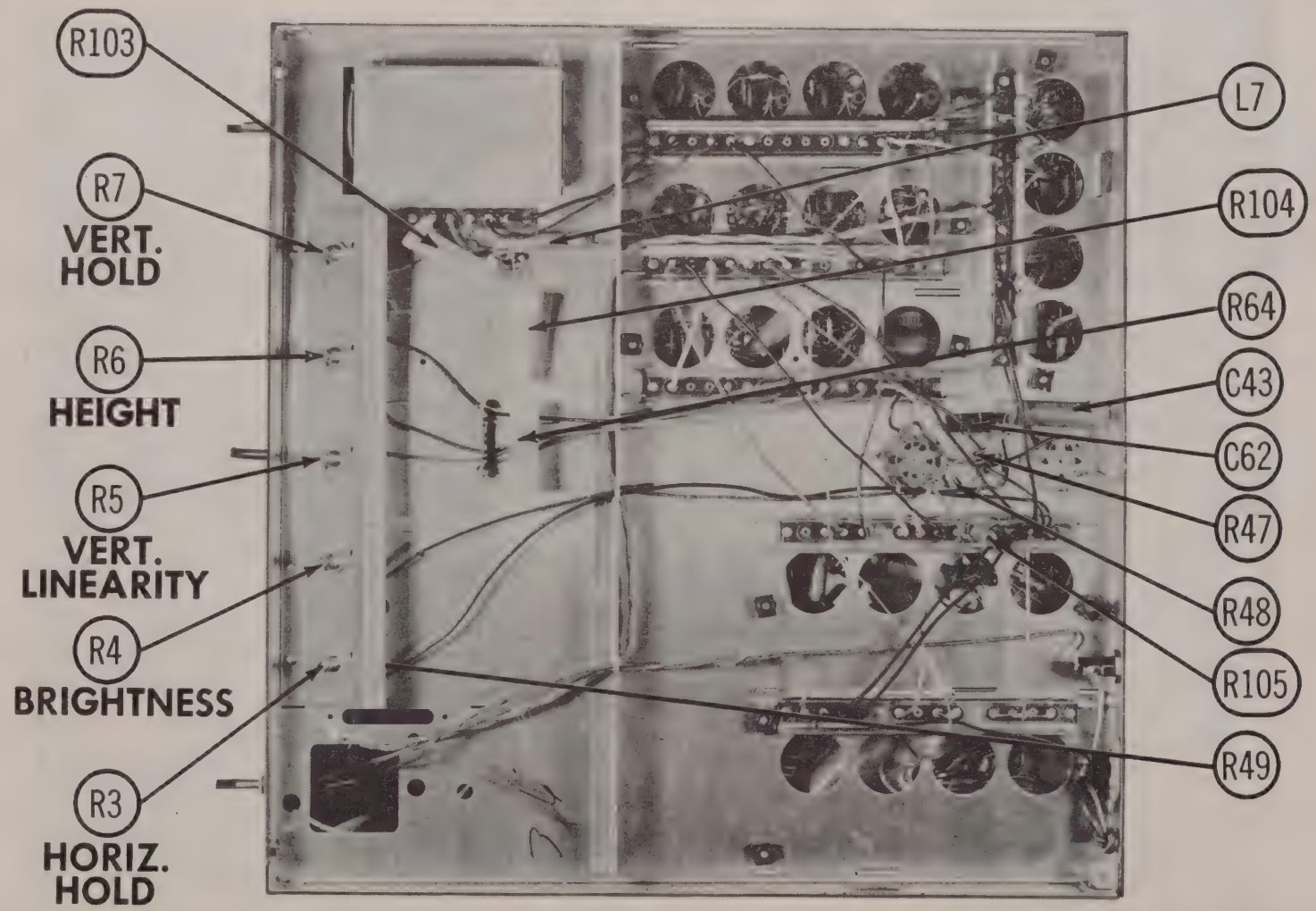
SUB-CHASSIS D4



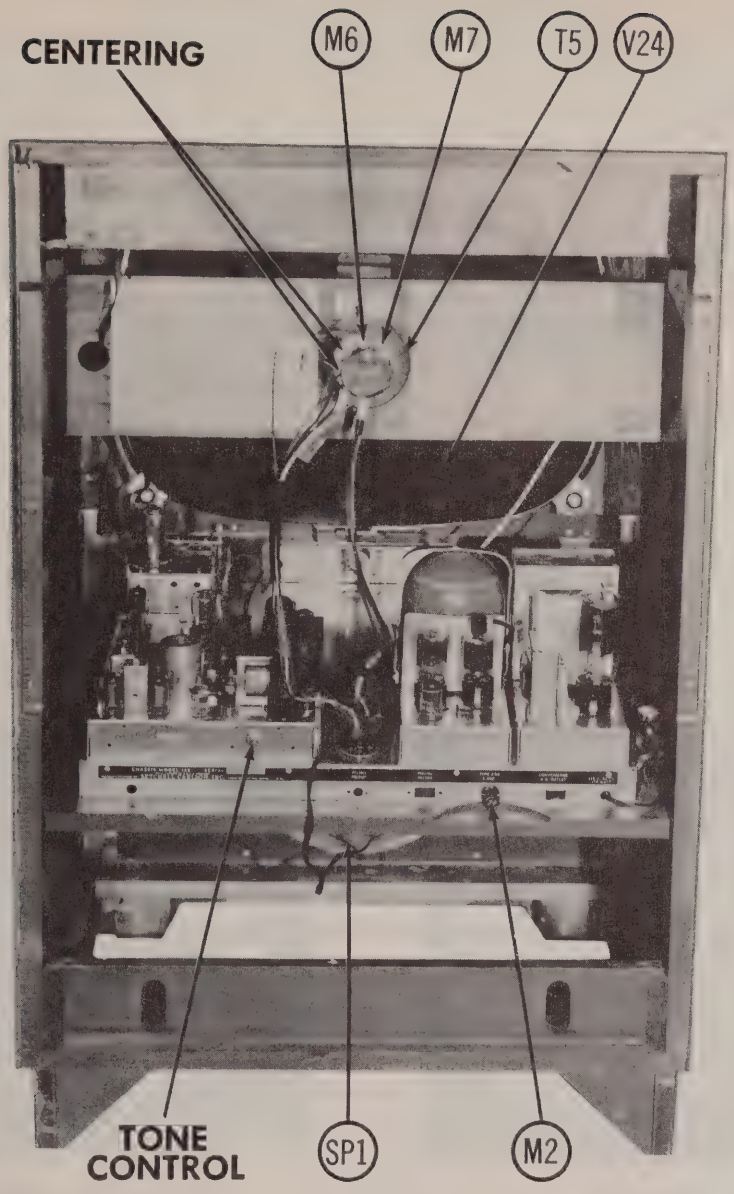
SUB-CHASSIS E4



SUB-CHASSIS F6



CHASSIS BOTTOM VIEW



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station. Adjust the horizontal hold control to synchronize the picture horizontally. If control must be turned fully clockwise or counter clockwise to sync the picture, or if a slow warm up causes the horizontal frequency to drift, replace V19 (12AU7 or 12BH7).

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Substitute V20 and V21. Check yoke, C76 and T3.

INSUFFICIENT SWEEP

Substitute V19, V20 and V21. Check waveform at W16.

If Satisfactory	If Unsatisfactory
Check C73, C75, C76, T3, C8, M1 and other components associated with V20 and V21.	Check C70, C71, C72, C8 and other components associated with V19.

DRIVE LINES

Substitute V20 and V21. Check C70, C71, C75 and T3. Check M1 and other associated components.

COMPRESSED LEFT SIDE

Substitute V19, V20 and V21. Check C70, C71, C75, T3, M1 and other associated components.

FOLDS

Substitute V19, V20 and V21. Check C70, C71, T3, C75 and other associated components.

XMAS TREE EFFECT (Fig. 1)

Check C69, R89, C68, R90, C3 and other components associated with V19.

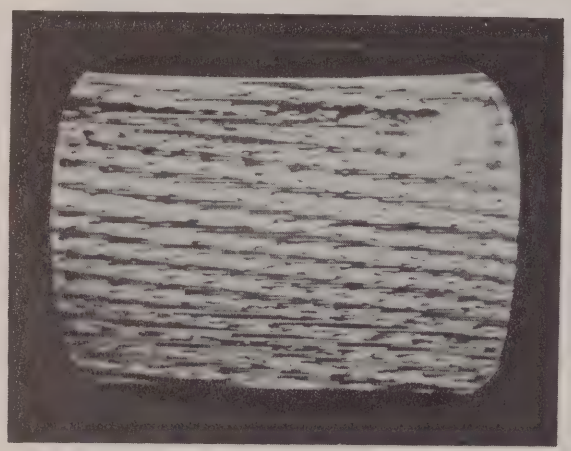


Fig. 1 XMAS TREE EFFECT
SEE HORIZ. SWEEP

VERTICAL

LOSS OF SWEEP

Substitute V16 and V17. Check T2, T4, C61 and other associated components. Check yoke.

INSUFFICIENT SWEEP

Substitute V16 and V17. Check T2, T4, C6, C7, C61, R79 and other associated components. Check yoke.

COMPRESSED AT BOTTOM

Substitute V16 and V17. Check C7, T4 and yoke.

COMPRESSED AT TOP

Substitute V16 and V17. Check T4, yoke and other associated components.

FOLDS

Substitute V16 and V17. Check T4, yoke and other associated components.

EXCESSIVE VERT. FREQUENCY (Fig. 2)

This condition is caused by the wave shaping capacitor C60 being open.

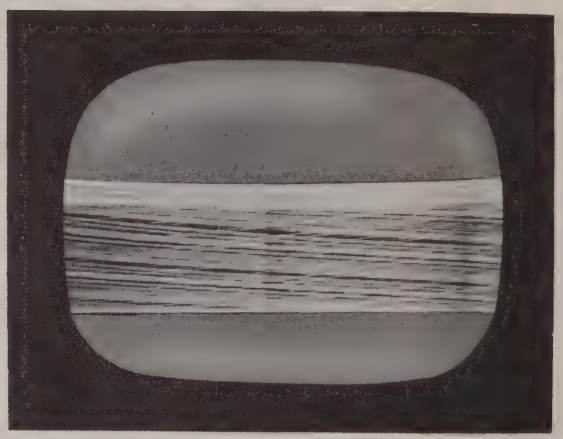


Fig. 2 EXCESSIVE VERTICAL FREQUENCY
SEE VERT. SWEEP

SYNC

HORIZONTAL

LOSS OF SYNC

Substitute V18 and V19. Check associated circuit components.

CRITICAL SYNC

Substitute V18 and V19. Check C68, R83, R84, C67, C63, C64 and other associated components.

PULLING PICTURE

Substitute V18 and V19. Check C67, C68 and other components associated with V18 and V19 .

VERTICAL

LOSS OF SYNC

Substitute V16. Check T2 and vertical integrator network (C56, C57, C58, R72, R73 and R71). Check C59.

CRITICAL SYNC

Substitute V16. Proceed as outlined under "Vertical, Loss of Sync".

TRIGGERING

Substitute V15 and V16. Check circuit near these tubes for filament lead dress.

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF Tuner Oscillator Circuit may be accomplished by removal of the Channel Selector and Fine Tuning knobs. The adjustments are accessible, one at a time, through the small hole in the cabinet to the right of the Channel Selector shaft.

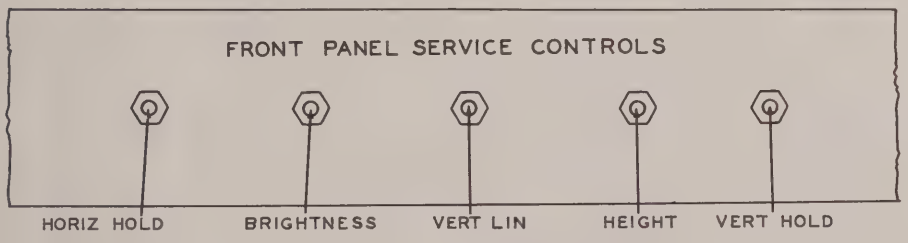
PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass remove three wood screws holding wood strip at top of the cabinet. Remove wood strip and lift safety glass out. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION



HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjust the horizontal hold control until picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate Sound IF Detector Buzz, adjust the Ratio Detector Secondary L21 located on top of chassis. (See tube placement chart).

FUSES

One fuse is used for L.V. Power Supply protection. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: Setechell-Carlson PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1	RF Amplifier		6BQ7	9AJ	
V2	Converter		6J6	7BF	
V3	1st. Video IF Amp.		6BA6	7BK	
V4	2nd. Video IF Amp.		6BA6	7BK	
V5	3rd. Video IF Amp.		6BA6	7BK	
V6	4th. Video IF Amp.		6AU6	7BK	
V7	Video Amplifier		6AU6	7BK	
V8	Video Output		6K6GT	7S	
V9	AGC Keying		6AB4	5CE	
V10	1st. Sound IF Amp.		6AU6	7BK	
V11	2nd. Sound IF Amp.		6AU6	7BK	
V12	Ratio Detector		6AL5	6BT	
V13	AF Amplifier		6AV6	7BT	
V14	Audio Output		6V6GT	7S	
V15A	Sync Separator - Sync Phase Inv.		12AU7	9A	
B	Sync Separator - Sync Phase Inv.		12BH7	9A	
V16	Vert. Oscillator		6C4	6BD	
V17	Vert. Output		6V6GT	7S	
V18	Horiz. AFC		6AL5	6BT	
V19 A	Horiz. Mult.		12AU7	9A	
B	Horiz. Mult.		12BH7	9A	
V20	Horiz. Output		6BQ6GT	6AM	
V21	Damper		6AX4GT	4CG	
V22	HV Rectifier		1AX2		
V23	LV Rectifier		5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: Setchell-Carlson PART No.	REPLACEMENT DATA: SYLVANIA PART No.		RTMA BASE TYPE	NOTES
V24	21FP4A	21FP4A 21FP4 ①		12C 12C	① Circuit Changes Necessary

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Setchell-Carlson PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1	40	450		PR8450/40		BR4045A		TC76	TVA-1712	
C2	40	450		PR8450/40		BR4045A		TC76	TVA-1712	
C3	10	450		PR8450/10		BR1045A		TC72	TVA-1705	
C4	4	50		PR8150/4		BR550		TC30	TVA-1303	
C5	10	450		PR8450/10		BR1045A		TC72	TVA-1705	
C6	10	450		PR8450/10		BR1045A		TC72	TVA-1705	
C7	100	50		PR850/100		BRH50I		TC3501	TVA-1310	
C8	40	450		PR8450/40		BR4045A		TC76	TVA-1712	
C9	3-9				829-10					
C10	800			CN-1-001	MFT-1000				503C-D1	
C11	3.9						NP0K-3R9			
C12	1.5			5IL.5NP0	TCZ-1.5		NP0K-1R5	ZT-5515	5TCCB-V15	
C13	1000			CN-1-001	MFT-1000				503C-D1	
C14	.5-3				829-3			CT565A		
C15	47			BPD-000047	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C16	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C17	800			CN-1-001	MFT-1000				503C-D1	
C18	800			CN-1-001	MFT-1000				503C-D1	
C19	47			BPD-000047	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C20	.5-3				829-3			CT565A		
C21	5			5I5N750	TCN-5		N750K-050	NT-555	5TCUB-V5	
C22	10			5I10NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C23	6.8			5I6.8NP0	TCZ-6.8		NP0K-6R8	ZT-5568	5TCCB-V68	
C24	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C25	800			CN-1-001	MFT-1000				503C-D1	
C26	120			BPD-00012	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C27	10000			BPD-01	DD-1032	TM5B1	81I-01	DC-511	5HK-S1	
C28	10000			BPD-01	DD-1032	TM5B1	81I-01	DC-511	5HK-S1	Note 1
C29	10000			BPD-01	DD-1032	TM5B1	81I-01	DC-511	5HK-S1	
C30	10000			BPD-01	DD-1032	TM5B1	81I-01	DC-511	5HK-S1	
C31	.47	200		P288-47		P2P5		PT405	2TM-P47	
C32	10000			BPD-01	DD-1032	TM5B1	81I-01	DC-511	5HK-S1	
C33	10000			BPD-01	DD-1032	TM5B1	81I-01	DC-511	5HK-S1	
C34	10000			BPD-01	DD-1032	TM5B1	81I-01	DC-511	5HK-S1	
C35	10000			BPD-01	DD-1032	TM5B1	81I-01	DC-511	5HK-S1	
C36	10000			BPD-01	DD-1032	TM5B1	81I-01	DC-511	5HK-S1	
C37	10000			BPD-01	DD-1032	TM5B1	81I-01	DC-511	5HK-S1	
C38	10000			BPD-01	DD-1032	TM5B1	81I-01	DC-511	5HK-S1	
C39	10000			BPD-01	DD-1032	TM5B1	81I-01	DC-511	5HK-S1	
C40	270	500		1469-0003	TCZ-270	5R5T3		MCB241	MS-33	
C41	.047	400		P488-047		DF-503	PTE4247		PT4147	4TM-S47
C42	.047	400		P488-047		DF-503	PTE4S47		PT4147	4TM-S47
C43	.25	400		P488-25			PTE4P25		PT4025	4TM-P25
C44	10000			BPD-01	DD-1032	TM5B1	81I-01	DC-511	5HK-S1	
C45	10000			BPD-01	DD-1032	TM5B1	81I-01	DC-511	5HK-S1	
C46	10000			BPD-01	DD-1032	TM5B1	81I-01	DC-511	5HK-S1	
C47	10000			BPD-01	DD-1032	TM5B1	81I-01	DC-511	5HK-S1	
C48	.0027	400		SI270	D6-272		GP2-333-272	UC-5227	5GA-D27	
C49	10000			BPD-01	DD-1032	TM5B1	81I-01	DC-511	5HK-S1	
C50	10000			BPD-01	DD-1032	TM5B1	81I-01	DC-511	5HK-S1	
C51	.0047	400		P68S-0047	D6-472	PTE5D47	GP2-333-472	PT5247	5TM-D47	
C52	10000			BPD-01	DD-1032	TM5B1	81I-01	DC-511	5HK-S1	
C53	20	500		SI20NP0	TCZ-20	5R5Q2	NP0K-200	ZT-542	MS-42	
C54	.005	400		P68S-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C55	270	500		1469-0003	TCZ-270	5R5T3		MCB241	MS-33	
C56	.0027	400		SI270	D6-272		GP2-333-272	UC-5227	5GA-D27	
C57	.005	400		P68S-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C58	.005	400		P68S-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C59	.01	400		P488-01	D6-103	PTE4SI	GP2-333-103	PT4II	4TM-SI	
C60	.047	400		P488-047	DF-503	PTE4S47		PT4147	4TM-S47	

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Setchell-Carlson PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C61	.25	400		P488-25		PTE4P25		PT4025	4TM-P25	
C62	.047	400		P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C63	910	500		1464-0009		2R5T9			MS-39	
C64	910	500		1464-0009		2R5T9			MS-39	
C65	.01	400		P488-01	D6-103	PTE4SI	GP2-333-103	PT4II	4TM-SI	
C66	.01	400		P488-01	D6-103	PTE4SI	GP2-333-103	PT4II	4TM-SI	
C67	.0027	400		SI2700	D6-272		GP2-333-272	UC-5227	5GA-D27	
C68	.02	400		P488-02	DD-203	PTE4S2		PT4I2	4TM-S2	Note 2
C69	270	500								
C70	680	500								
C71	270	500								
C72	.0027	400		SI2700	D6-272		GP2-333-272	UC-5227	5GA-D27	
C73	.25	400		P488-25		PTE4P25		PT4025	4TM-P25	
C74	270	500		1469-0003	TCZ-270	5R5T3		MCB241	MS-33	Note 1
C75	.25	400		P488-25		PTE4P25		PT4025	4TM-P25	
C76	.05	400		P488-05	DF-503	PTE4S5		PT4I5	4TM-S5	
C77	470			BPD-00047	DD-471	TM5T5	GP2K-471	UC-5347	5GA-T47	
C78	500	20000		HV-24	TV2-502	MM-B20T5	413-501		20DK-T5	
C79	56				DI6-560	TM10Q56			20GA-Q56	
C80	.047	400		6892X-05		PJ4347		PT4147	4TM-S47	
C81	.01	600		6892X-01		PJ6SI		PT6II	6TM-SI	Note 1

Note 1. Not used in all Models.
Note 2. Some Models use .1MFD in this application.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Setchell-Carlson PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	TV1-60	Q13-133	AG-60-Z	B-60-Z	U-48	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A
R2A	4000Ω	½	TV1-61	Q11-114	AG-80-S	AB-9	U-14	Contrast
B	Shaft		Not Req.	Not Req.	FS-3	AK-3	Not Req.	Attach to R2A
R3A	100KΩ	½	TV1-62A	Q11-128	AG-49-S	AB-49	SU-41	Horiz. Hold
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R3A
R4A	2 Meg	½	TV1-51-5	Q11-139	AG-83-S	AB-75	SU-56	Brightness
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R4A
R5A	4000Ω	½	TV1-61-62A	Q11-114	AG-80-S	AB-9	SU-14	Vert. Linearity
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R5A
R6A	2 Meg	½	TV1-51-5	Q11-139	AG-83-S	AB-75	SU-56	Height
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R6A
R7A	2 Meg	½	TV1-51-5	Q11-139	AG-83-S	AB-75	SU-56	Vert. Hold
B	Shaft		Not Req.	Not Req .	FKS-1/4	AK-1	Not Req.	Attach to R7A
R8A	500KΩ	½	TX-15-1	Q13-133	AG-60-Z	AB-60	U-48	Tone
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R8A

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: Setchell-Carlson PART No.	IRC PART No.	NOTES
R9	15KΩ	½		BTS-15K	
R10	47KΩ	½			
R11	100KΩ	½		BTS-100K	
R12	160KΩ-5%	½		BTS-160K-5%	
R13	100KΩ-5%	½		BTS-100K-5%	
R14	1500Ω	½		BTS-1500	
R15	10KΩ	½		BTS-10K	
R16	220KΩ	½			
R17	10KΩ	½		BTS-10K	
R18	15KΩ	½			
R19	47KΩ	½		BTS-47K	
R20	47KΩ	½		BTS-47K	Note 1
R21	180Ω	½		BTS-180K	
R22	3900Ω	½		BTS-3900	Note 2
R23	82Ω	½		BTS-82	Note 3
R24	22KΩ	½		BTS-22K	
R25	150Ω	½		BTS-150	
R26	180Ω	½		BTS-180	
R27	180Ω	½		BTS-180	
R28	6800Ω	½		BTS-6800	Note 2
R29	82Ω	½		BTS-82	Note 4
R30	180Ω	½		BTS-180	
R31	180Ω	½		BTS-180	
R32	270Ω	1		BTA-270	
R33	8200Ω	½		BTS-8200	
R34	150Ω	½		BTS-150	Note 5
R35	3000Ω-5%	½		BTS-3000-5%	
R36	3900Ω	½		BTS-3900	
R37	3000Ω-5%	½		BTS-3000-5%	
R38	3900Ω	½		BTS-3900	
R39	22KΩ	½		BTS-22K	
R40	220KΩ	½		BTS-220K	
R41	22KΩ	½		BTS-22K	
R42	5.1Ω	½			
R43	3300Ω	1		BTA-3300	
R44	1 Meg	½		BTS-1 Meg	
R45	470Ω	½		BTS-470	
R46	22KΩ	½		BTS-22K	
R47	1 Meg	½		BTS-1 Meg	
R48	10Meg	½		BTS-10Meg	
R49	100KΩ	½		BTS-100K	
R50	4.7Meg	½		BTS-4.7Meg	
R51	82Ω	½		BTS-82	
R52	470Ω	½		BTS-470	
R53	180Ω	½		BTS-180	
R54	470Ω	½		BTS-470	
R55	180Ω	½		BTS-180	
R56	47KΩ	½		BTS-47K	
R57	6800Ω	½		BTS-6800	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: Setchell-Carlson PART No.	IRC PART No.	NOTES
R58	6800Ω	½		BTS-6800	
R59	4.7Meg	½		BTS-4.7Meg	
R60	470Ω	½		BTS-470	
R61	24Ω	½		BTS-24	
R62	1 Meg	½		BTS-1 Meg	
R63	470Ω	1		BTA-470	
R64	3000Ω	10		1 3/4A-3000	
R65	220KΩ	½		BTS-220K	
R66	4.7Meg	½		BTS-4.7Meg	
R67	220KΩ	½		BTS-220K	
R68	47KΩ	½		BTS-47K	
R69	5600Ω	½		BTS-5600	
R70	6800Ω	½		BTS-6800	
R71	22KΩ	½		BTS-22K	
R72	8200Ω	½		BTS-8200	
R73	8200Ω	½		BTS-8200	
R74	470KΩ	½		BTS-470K	
R75	470KΩ	½		BTS-470K	
R76	8200Ω	½		BTS-8200	
R77	2.2Meg	½		BTS-2.2Meg	
R78	1200Ω	½		BTS-1200	
R79	47KΩ	½		BTS-47K	
R80	470Ω	½		BTS-470	
R81	470Ω	½		BTS-470	
R82	1200	½		BTS-1200	
R83	2.2Meg	½		BTS-2.2Meg	
R84	4.7Meg	½		BTS-4.7Meg	
R85	220KΩ	½		BTS-220K	
R86	220KΩ	½		BTS-220K	
R87	22KΩ	½		BTS-22K	
R88	560Ω	½		BTS-560	
R89	100KΩ	½		BTS-100K	Note 6
R90	27KΩ	2		BTB-27K	
R91	100KΩ	½		BTS-100K	
R92	15KΩ	½		BTS-15K	
R93	22KΩ	½			
R94	1 Meg	½		BTS-1 Meg	
R95	1 Meg	½		BTS-1 Meg	
R96	82Ω	½		BTS-82	
R97	98Ω	1			
R98	22KΩ	½		BTS-22K	
R99	3.6Ω	½			
R100	3.6Ω	½			
R101	1 Meg	½			
R102	1 Meg	½		BTS-1 Meg	
R103	1500Ω	12		2D-1500	
R104	750Ω	10		1 3/4A-750	
R105	100Ω	5		1 3/4A-100	
R106	4700Ω	½		BTS-4700	Note 7

Note 1. Some models may use a 100KΩ resistor in this application.
Note 2. Some models may use a 8200Ω resistor in this application.
Note 3. Some models may use a 68Ω resistor in this application.
Note 4. Some models may use a 150Ω resistor in this application.
Note 5. Some models may use a 180Ω resistor in this application.
Note 6. Some models may use a 120KΩ resistor in this application.
Note 7. Not used in all models.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	RATING: SEC. 4	REPLACEMENT DATA: Setchell-Carlson PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.
T1	117VAC ②1.9A	700VCT .230ADC	5VAC ④ 3A	6.3VAC ⑤1.19A SEC. 4 6.3VAC ⑥7.2A		M575-C	P-8170 ①	P-3165		R-34A ①	

① Drill new mounting holes.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: Setchell-Carlson PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.	NOTES
T2	240Ω	960Ω	M-682	A-8111	A-3000	TSO-5 ①	A-97X	208T2 ⑤	Vert. Osc. Trans.
T3	210Ω tap ③ 40, 60Ω	8.5Ω tap ③ 2.4Ω, 4Ω SEC. 2 0Ω							
T4	620Ω tap ③ 8.5Ω		M-685	A-8123	A-3037	TSO-8 ②	A-102X	222T1	Vert. Output Trans.
T5A	13Ω		52B13B	DY-9A ③ ④	MDF-70 ③ ④	TY-5 ③ ④	Y-21 ③ ④	206D1 ③ ④	Horiz. Deflection Coils
B	46Ω								Vert. Deflection Coils

① Drill one new mounting hole.
② Connect as auto trans.
③ Use original yoke cover.
④ Use original deflection coil network if necessary.
⑤ Mount on top of chassis.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: Setchell-Carlson PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T6	6.5KΩ	3.4Ω	350Ω	.47Ω	M681	A-3877	A-2930	RO-9 ①	S-3X	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: Setchell-Carlson PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1	10"	PM	3.4Ω	TV121-10	10J11	10A31	

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D.C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA: Setchell-Carlson PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L1	.230ADC	39Ω	2 Hy.	M571	C-2326 ①		TR-1733 ①	P-23X ①

① Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: Setchell-Carlson PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L2	Ant. Coils	0Ω CT	0Ω					
L3	Fil. Choke	0Ω						
L4	Neutr. Coil	0Ω						
L5	RF, Mixer Grid & Osc. Coils	0Ω						
L6	Fil. Choke	0Ω						
L7	Fil. Choke	0Ω						
L8	RF Choke	0Ω						
L9	1st. Video IF	.8Ω			19-1020	TV-112 *	6171 *	
L10	RF Choke	1.4Ω						
L11	2nd. Video IF	.4Ω	.4Ω	B72A83-3	17-1066			
L12	Fil. Choke	0Ω						
L13	3rd. Video IF	.4Ω	.4Ω	B72A83-3	17-1063			
L14	4th. Video IF	.4Ω	.4Ω	B72A83-3	17-1083			
L15	5th. Video IF	.4Ω	.4Ω	B72A83-3	17-1083			
L16	Shunt Peaking Coil	1Ω		D-2000	19-3250	TV-188	6181	245 Microhenries
L17	Shunt Peaking Coil	1Ω		D-2000	19-3250	TV-188	6181	245 Microhenries
L18A	Series Peaking Coil	6Ω		TV-121-3		TV-184	6180	190 Microhenries
B	Shunt Peaking Coil	7Ω				TV-184	6180	Part of L18A, 190 Microhenries Includes capacitor
L19	1st. Sound IF	4.6Ω		C-4501	17-1025 =			
L20	2nd. Sound IF	.8Ω	3.6Ω	C-4502	16-3445	TV-113 ▲	1466 †	
L21	Ratio Det.	4Ω	.8Ω CT	B13M19643	17-3493	TV-115 ▲	6205 ▲	Tertiary winding -.4Ω

* Enlarge mounting hole.
▲ Use adaptor plate
† Drill one new mounting hole.
= Do not use center tap of winding

SELENIUM RECTIFIER

ITEM No.	RATING: CURRENT	REPLACEMENT DATA: Setchell-Carlson PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.
M1	.015ADC		NA5	8J1	1002A	6S65	65

PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Setchell-Carlson PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	3AG	3A @ 250 V.			312003 (3AG 3)	342003	AGC 3	HKP

MISCELLANEOUS

ITEM No.	PART NAME	Setchell-Carlson PART No.	NOTES
M3	Pilot Light		Type #47
M4	RF Tuner		Unit A, Series 3
M5	Crystal Diode		Video Det. Assy.
M6	Centering Magnet		
M7	Ion Trap Magnet		

TROUBLE SHOOTING AIDS (CONT.)

VIDEO

SOUND BARS

Check setting of Local Oscillator. Check setting of sound take off trap A6.

POOR RESOLUTION

Substitute V1, V3, V4, V5, V6 and video detector crystal. Check components of the video IF strip. Check video IF alignment.

POOR CONTRAST

Substitute V7 and V8. Check C41 and C42. Check other components associated with V7 and V8. Check picture tube.

SMEAR

Substitute V7 and V8. Check C41 and C42. Check R36, R38, R44 , R45 and R46 for change of value. Check L19A for open. Check picture tube.

ONE BLACK BAR ACROSS PICTURE

Check RF tuner, Video IF , and Video amplifier and output tubes for heater to cathode leakage.

AUDIO

WEAK OR NO SOUND

Substitute V10, V11, V12, V13 and V14. Check stages of V13 and V14 by shorting Pin 1 of V13 to chassis. A loud noise should result. Check ratio detector alignment. Check alignment of audio IF stages.

BUZZ

Check ratio detector alignment, if buzz is still objectionable substitute V12 and readjust A8 and A9. Check stabilizing capacitor C4 for leakage.

DISTORTED

Check stages of V13 and V14 using audio signal generator. Check alignment of audio IF and ratio detector. Check C4, C44, C45, C46, C47 and other components associated with the audio section.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Substitute V19, V20, V21, V22 and V23. Check waveform at W16.

If Satisfactory	If Unsatisfactory
Check R99, R100, R101, C78, C75, C76, T3 and other associated components.	Check C70, C71, C72, C69 and other components associated with V19.

INSUFFICIENT HIGH VOLTAGE

Substitute V19, V20, V21, V22 and V23. Proceed as outlined under "LOSS OF HIGH VOLTAGE".

BLOOMING

Substitute V20, V21 and V22. Check R99, R100, R101, C78, T3 and other associated components. Check picture tube.

POWER

SMALL AND/OR DIM RASTER

Substitute V23. Measure B+.

If Low	If Satisfactory
Proceed as outlined under "Horizontal, Insufficient Sweep".	Check L1, C1, C2 and other B+ filter and decoupling components.

DIM, FUZZY PICTURE POOR SOUND

Substitute V23. Check C1, C2 and L1. Check decoupling network.

GENERAL

RASTER, NO SOUND, NO PICTURE

Substitute V1, V2, V3, V4, V5, V6 and Video detector crystal. Check video IF components. Check video IF alignment.

RASTER, SOUND, NO PICTURE

Substitute V7 and V8. Check associated circuit components. Check picture tube.

SNOW, NO PICTURE, NO SOUND

Check antenna connection and RF amplifier V1. This condition will be most noticeable in low signal areas.

INTERMITTANT STREAKS

Check high voltage section for corona discharge and arcing. Check picture tube outer coating ground strap.

TOTAL LOSS OF SYNC

Substitute V15. Check associated circuit components. Check signal at W6 for signal overload and sync clipping.

POOR FOCUS

Substitute V23. Check B+.

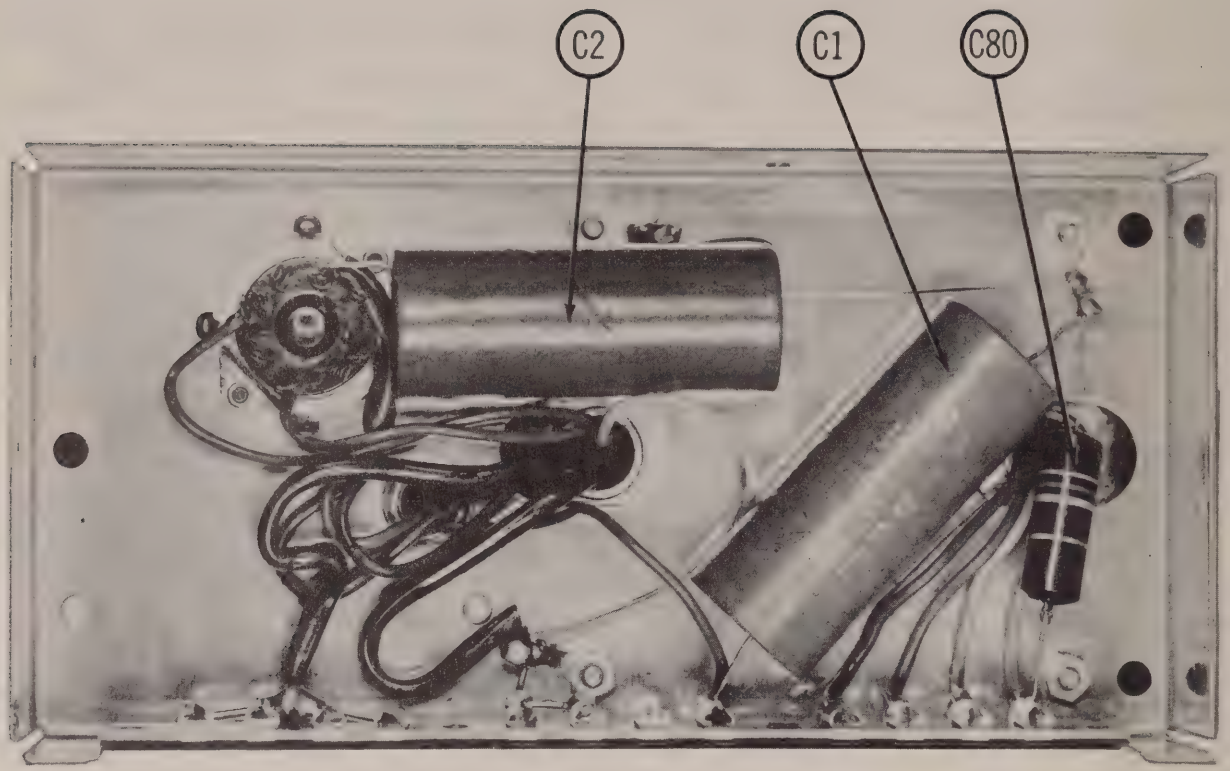
If Low	If Satisfactory
Check C1, C2 and L1.	Check picture tube.

SET DEAD

Check line fuse M2. Check on-off switch on volume control Check T1.

Note: Holes are provided in the main chassis pan for cooling. A large part of signal tracing voltage and resistance measurements may be taken through these holes. Should it become necessary to remove a sub-assembly unit and connect it with jumpers, care should be used not to short between the terminals and thus damage the receiver.

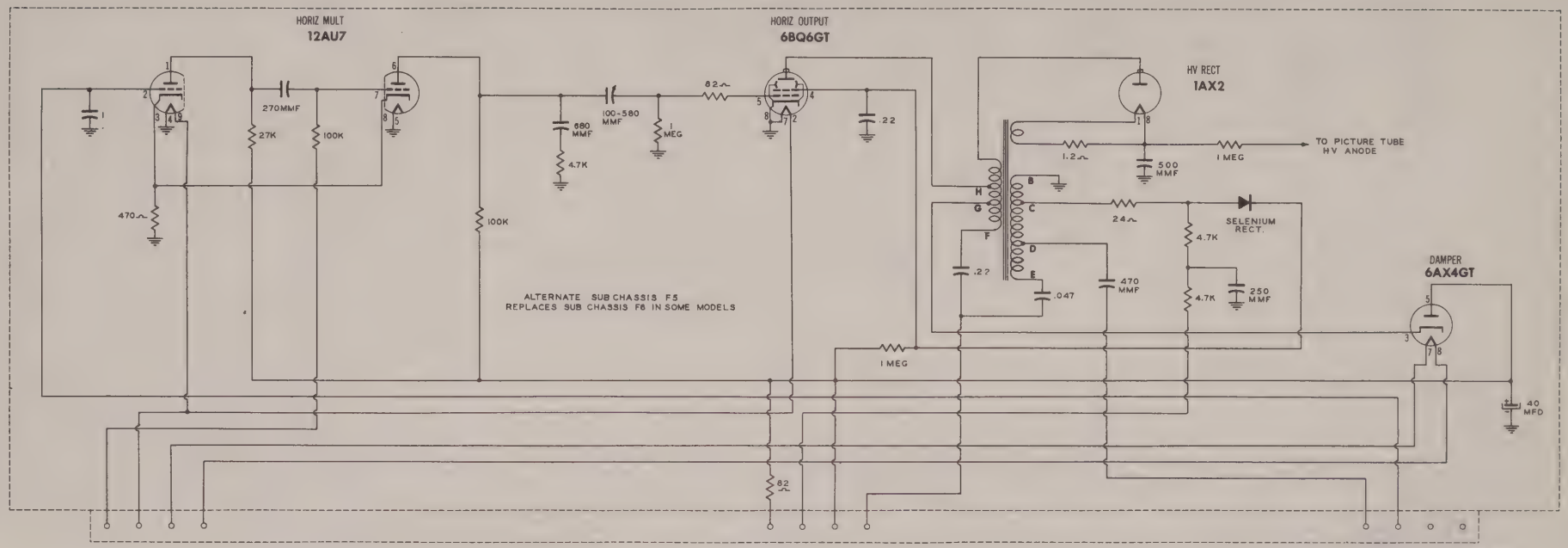
The Trouble-Shooting photographs shown above are made with permission of transmitting station WFBM-TV and in no way reflect the quality of the transmitted picture. Similarly, symptoms shown are assumed and are not indicative of the quality and workmanship of this receiving equipment.



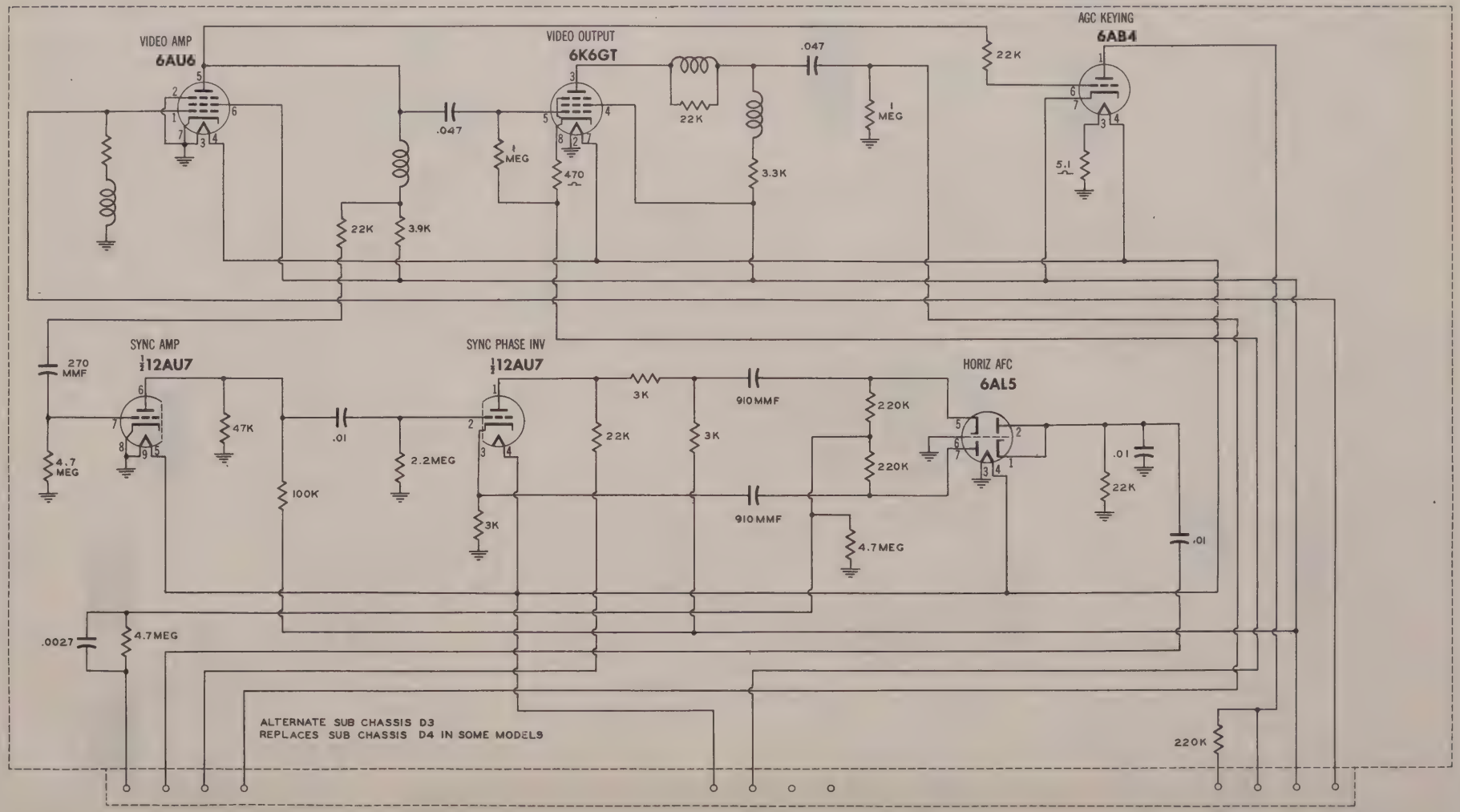
SUB-CHASSIS G2

DISASSEMBLY INSTRUCTIONS

1. Remove 5 push on type control knobs from front panel.
2. Remove 6 wood screws. Remove rear cover.
3. Remove 2 wood screws. Remove antenna bracket.
4. Disconnect speaker, yoke plug, HV lead, CRT socket.
5. Remove 2 chassis bolts. Remove chassis.
6. Remove 4 speaker nuts. Remove speaker.



ALTERNATE SUB-CHASSIS F5

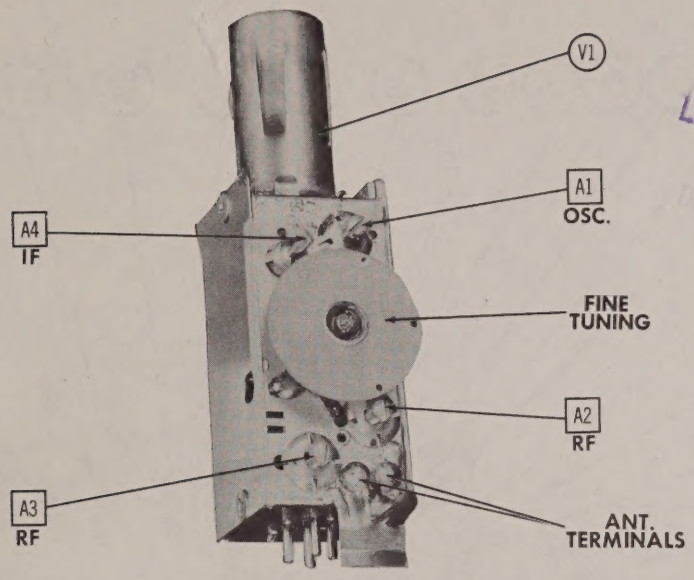


ALTERNATE SUB-CHASSIS D3

WESTINGHOUSE MODEL H-802 (Ch. V-11900-1,-2,-3,-4,-5,V-11213) UHF Conv.

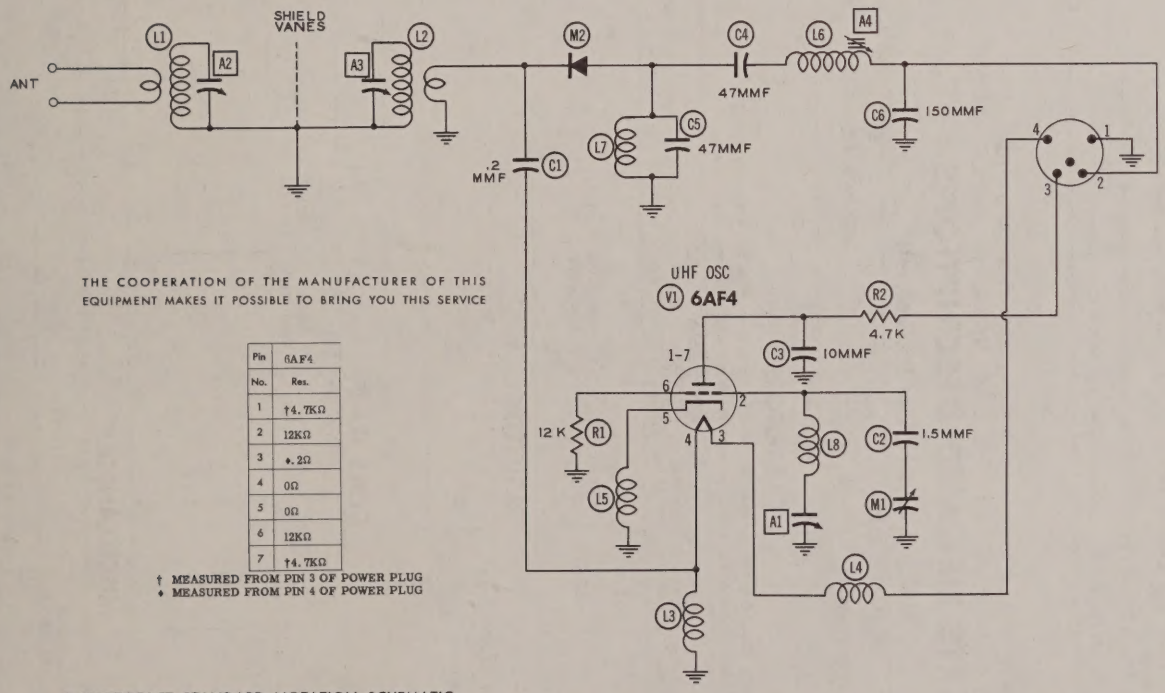
WESTINGHOUSE MODEL H-802 (Ch. V-11900-1,-2,-3,-4,-5,V-11213) UHF Conv.

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



TRADE NAME	Westinghouse Model H-802 (Ch. V-11900-1, -2, -3, -4, -5, V-11213)
MANUFACTURER	Westinghouse Electric Corp., TV-Radio Div., Sunbury, Pennsylvania
TYPE SET	Plug-In Type Single Channel UHF Converter
TUBES	Type 6AF4 Oscillator

FREQ. RANGES	CHASSIS NO.	CHANNEL COVERAGE (ANY ONE CHANNEL)
	V-11900-1	Channels 14 thru 29
	V-11900-2	Channels 28 thru 43
	V-11900-3	Channels 43 thru 58
	V-11900-4	Channels 58 thru 73
	V-11900-5	Channels 73 thru 83
	V-11213	Special Ranges



THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

Pin No.	6AF4 Res.
1	†4.7KΩ
2	12KΩ
3	♦.2Ω
4	0Ω
5	0Ω
6	12KΩ
7	†4.7KΩ

† MEASURED FROM PIN 3 OF POWER PLUG
♦ MEASURED FROM PIN 4 OF POWER PLUG

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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ALIGNMENT INSTRUCTIONS

Turn the fine tuning wheel on the receptor to its center position. (The middle hole in the rim of the wheel will be straight up from the center of the wheel).
Set the channel selector of the receiver to the appropriate UHF position.
Adjust the oscillator trimmer, A1, for best picture detail. The unit is properly aligned at the factory, so only slight adjustment should be necessary. If the station is not received, other possibilities should be considered before excessively adjusting A1.
Adjust RF trimmers, A2 and A3, for best picture detail. Do not turn too far in a counter clockwise direction or they will be detached from the unit.
Adjust the IF trimmer slug, A4, for best picture detail. This adjustment has a broad tuning characteristic and is most effective in weak signal areas.
Note: On some converters marked Ch. V-11213 the physical location of the If & Osc. trimmers are interchanged.

THE PARTS VALUES LISTED BELOW ARE FOR CH. V-11900-1
AND WILL NOT BE NECESSARILY THE SAME VALUE FOR OTHER CHASSIS.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		Westinghouse PART No.	STANDARD REPLACEMENT		
V1	UHF Oscillator	6AF4	6AF4	7DK	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Westinghouse PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1	.2									
C2	1.5									
C3	10			SI10N750	TCN-10		N750K-100	NT-541	5TCU-Q1	
C4	47			SI47NP0	TCZ-47		NP0L-470	ZT-545	5TCC-Q47	
C5	47									
C6	150									

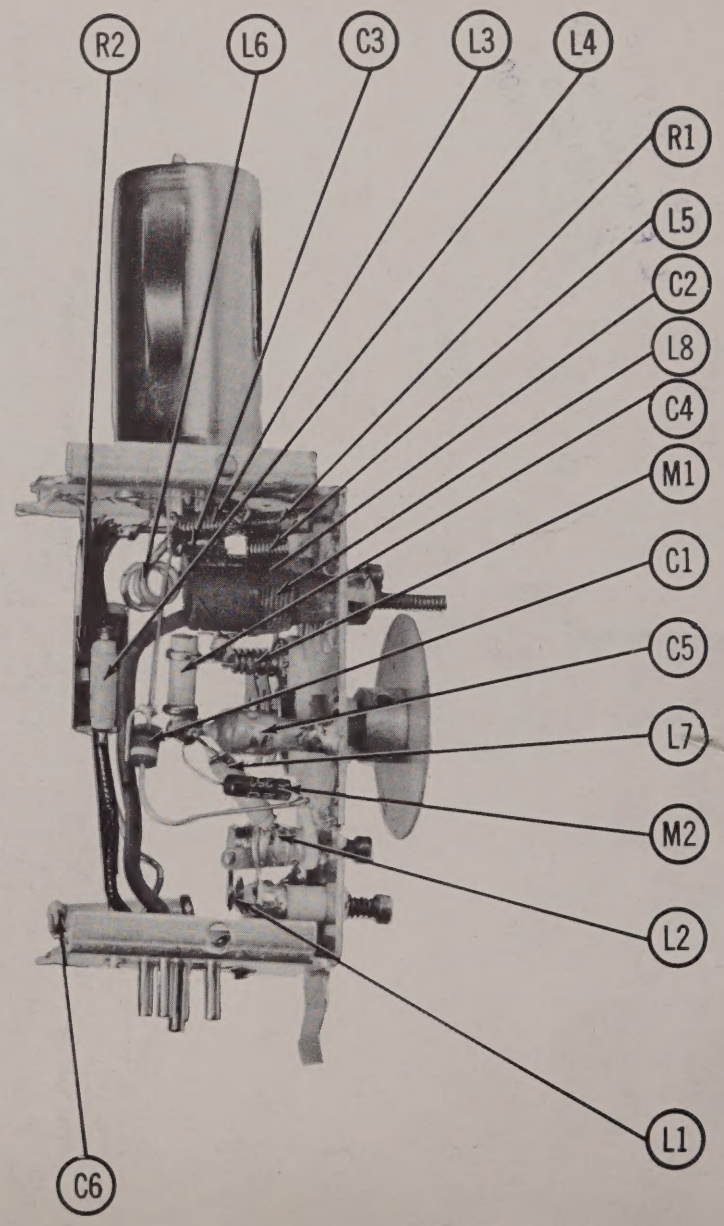
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Westinghouse PART No.	IRC PART No.	
R1	12KΩ	½		BTS-12K	
R2	4700Ω	2		BTB-4700	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	Westinghouse PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Trans.	0Ω	0Ω					
L2	RF Coil	0Ω	0Ω					
L3	Fil. Choke	0Ω						
L4	Fil. Choke	.2Ω						
L5	Cathode Choke	0Ω						
L6	Osc. Coil	0Ω						
L7	RF Choke	.2Ω						
L8	IF Coil	0Ω						

MISCELLANEOUS

ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M1	Tuning Capacitor		
M2	Crystal Diode		Raytheon CK-710

CHASSIS—TOP VIEW